

# GENERAL DYNAMICS

## Land Systems

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Sr. Environmental, Health and Safety Specialist

August 21, 2020

Materials Licensing Branch  
U.S. Nuclear Regulatory Commission  
Region III  
2443 Warrenville Road, Suite 210  
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Subject: Notification of Permanent Cessation of Licensed Activities at, Group 1 Decommissioning of, Final Status Survey Report (FSSR) for, and Certification of Acceptability for Unrestricted Use of the General Dynamics Land Systems Anniston Army Depot Facilities

- Reference:
- (a) U.S. Nuclear Regulatory Commission Byproduct Materials License 21-21068-01, Docket No. 030-19731, Amendment 27, General Dynamics Land Systems
  - (b) U.S. Nuclear Regulatory Commission letter dated December 8, 2018 (ML18352A998), Subject: General Dynamics Land Systems; Notification To Cease Principal Activities At The Anniston Army Depot Under License 21-21068-01
  - (c) U.S. Nuclear Regulatory Commission letter dated January 9, 2019 (ML18009A324), subject: Amendment No. 27 to NRC Materials License no. 21-21068-01
  - (d) U.S. Nuclear Regulatory Commission. Standards for protection against radiation. Washington, DC: U.S. Government Printing Office; 10 CFR Part 20; 2017
  - (e) U.S. Nuclear Regulatory Commission. Standards for protection against radiation. Washington, DC: U.S. Government Printing Office; 10 CFR Part 30; 2017
  - (f) U.S. Nuclear Regulatory Commission. Consolidated decommissioning guidance: Decommissioning process for materials licensees: Final report; NUREG-1757, vol. 1, rev. 2; 2006 [Online] <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1757/v1/> (Accessed August 20, 2020)
  - (g) Headquarters Department of the Army. Department of the Army pamphlet 385-24: Safety: The Army radiation safety program; 2015 [Online] [http://www.apd.army.mil/epubs/DR\\_pubs/DR\\_a/pdf/web/p385\\_24.pdf](http://www.apd.army.mil/epubs/DR_pubs/DR_a/pdf/web/p385_24.pdf) (Accessed August 20, 2020)
  - (h) General Dynamics Land Systems, Radiation Survey Report, ANAD020419Ni63, signature date August 20, 2020
  - (i) RAM Services, Inc. Initial analysis and screening report, isotope Ni-63, report date 22 February 2019, GDLS Project ANAD020419Ni63
  - (j) RAM Services, Inc. Wipe test analysis report, isotope Ni-63, report date 02 October 2017, GDLS Project SHEL092717Ni63
  - (k) RAM Services, Inc. Sealed source leak test certificates, isotope Ni-63, RAM accession numbers 141815 – 141839, report date 08 September 2016, General Dynamics – Land Systems, GDLS Project CO090616H3Ni63

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- (l) RAM Services, Inc. Wipe test analysis report, isotope Ni-63, report date 16 March 2009, GDLS Project CO022409Ni63
- (m) Berthold Technologies LB1210B certificate with LB6255, order no. 1133782, date 12.11.2018
- (n) Airgas Certificate of Analysis, Grade of Product ECD/Nuclear Counter UHP, lot no. 32-401388413-1, analysis date December 31, 2018
- (o) Technical Maintenance, Inc., Certificate of Calibration, Radiation Alert Inspector, Certificate no. 19-561
- (p) U.S. Nuclear Regulatory Commission. Memorandum to John Hickey, Chief Materials Safety and Inspection Branch, DIMNS, NMSS, From Kathy Dolce Modes /RA Senior Health Physicist by Pamela Henderson Acting For/ John McGrath /RA/ Senior Health Physicist, subject: Leak-Testing of nickel-63 sealed sources; August 1, 2001 [Online] <https://www.nrc.gov/docs/ML0121/ML012140304.pdf> (Accessed October 9, 2017)

Enclosure(s): references h, i, m, n and o

Materials Licensing Branch:

This letter is submission to the U.S. Nuclear Commission (NRC) General Dynamics Land Systems' (GDLS') final decommissioning survey (ref. b and ref. e, §30.36(d)(2)) of the following operations:

General Dynamics  
Anniston Operations  
Anniston Army Depot  
Buildings 134 & 414  
7 Frankford Ave  
Anniston, Alabama, 36206 (ref. a, item 10.A.)

GDLS has decommissioned the Anniston Operations under Group 1 decommissioning (ref. f, sec. 8; ref. g, sec. 9-2). GDLS has not handled, possessed, received, stored, transferred, or otherwise used (used) any specifically licensed radioactive materials or commodities at its Anniston Operations since November 3, 2018.

GDLS has determined as the final status of the Anniston Operations that the Anniston Operations:

1. is free of any residual surface or volumetric byproduct material contamination above natural background levels, Ni-63 in particular, as result of GDLS handling, possession, receipt, storage, transfer and use (use) of NRC licensed byproduct material commodities at the facility; and,
2. meets all U.S. Army (ref. g) and NRC (refs. d and f) surface contamination screening levels for unrestricted release for use by the public.

The bases of GDLS' final status determination for the Anniston Operations are:

August 21, 2020

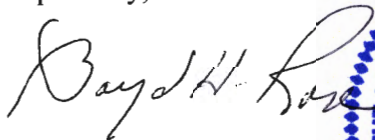
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1. GDLS' possession and use (regular/long-term receipt as discreet consignments or installed on or removed from military vehicles, transfer to the U.S. Army, and long-term storage) of M88 ACADA units that did not leak while in GDLS possession;
2. the final surface wipe survey and the direct surface measurements for beta contamination and beta-gamma radiation of the facility (refs. h and i; tables 1 – 3 and figures 1 – 12 of this letter) which finds the absence of residual beta particle surface contamination on or beta-gamma radiation from facility surfaces exceeding either natural background levels, the sealed source leak limit (ref. a, item 15.E.), or the U.S. Department of the Army (DA) (ref. g, table 5-3) or NRC (ref. f, table B.1) screening levels for unrestricted release (ref. d, § 20.1402);
3. the most recent leak tests / wipe survey data (ref. g) for M88 ACADA units that have been similarly possessed and used by GDLS at the General Dynamics Land Systems Central Office (ref. a, item 10.A. and the former GDLS Shelby Operations (ref. c) which demonstrate that M88 ACADA units in GDLS possession and use at GDLS operations are not likely to leak at levels that exceed natural background levels or at levels at or above the sealed source leak limit (ref. a, item 15.D.), or the U.S. Department of the Army (DA) (ref. g, table 5-3) or NRC (ref. f, table B.1) screening levels for unrestricted release;
4. historical leak test / wipe survey data (ref. l) for an M88 ACADA unit found in a severely battle damaged (fire damaged) combat vehicle, which demonstrates that that M88 ACADA units in GDLS possession and use at GDLS operations are not likely to leak at levels that exceed natural background levels, at levels at or above the sealed source leak limit (ref. a, item 15.E.), or the U.S. Department of the Army (DA) (ref. g, table 5-3) or NRC (ref. f, table B.1) screening levels for unrestricted release; and,
5. the NRC's internal health physics opinion (ref. p) that nickel-63 sources do not leak readily and pose negligible consequences from contamination when found leaking.

Please contact Bradley M. Gemlick, Manager EHS/RSO, at (419) 221-8131 (tel) or [gemlickb@gdls.com](mailto:gemlickb@gdls.com), or Kenneth E. Scotford, Manager EHS, at (586) 825-7875 or [scotford@gdls.com](mailto:scotford@gdls.com) if additional information is required regarding this matter.

Note that the undersigned will no longer be the NRC license radiation safety officer (RSO) for General Dynamics Land Systems effective as of August 31, 2020; the NRC license RSO responsibilities will be designated / assumed by Bradley M. Gemlick after August 31, 2020 and an amendment application to effect the change in RSO will be submitted within the authorized period proximate to August 31, 2020.

Respectfully,



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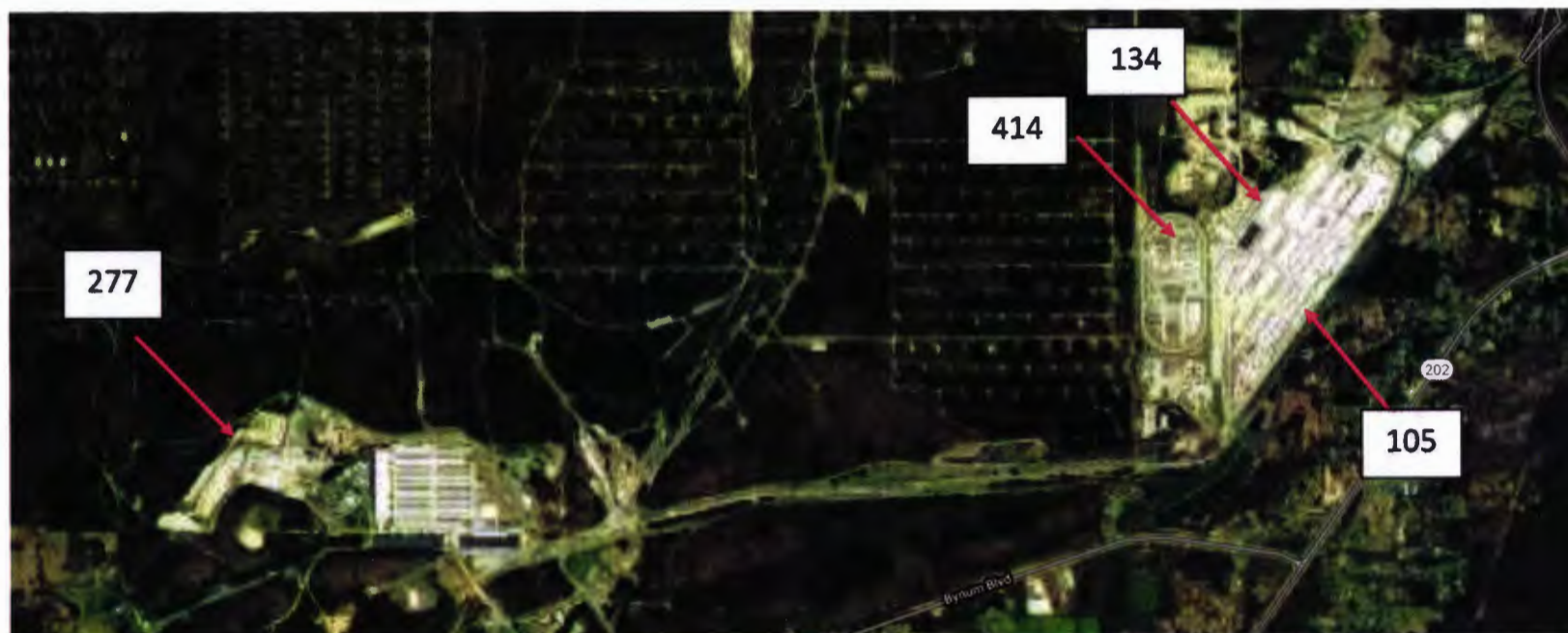
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## Enclosures



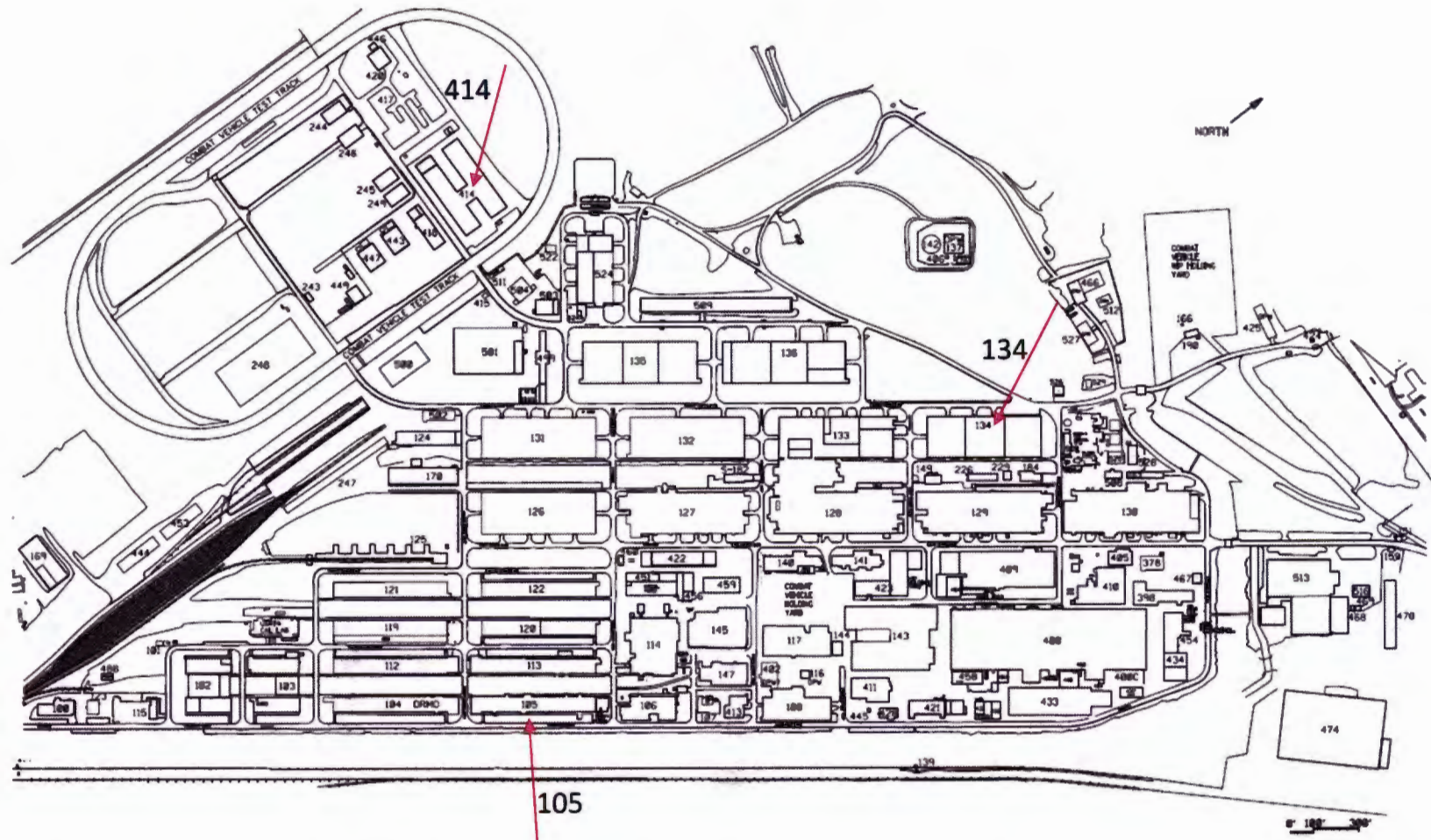
**Figure 1.** ANAD0200419Ni63 surveyed building locations satellite view





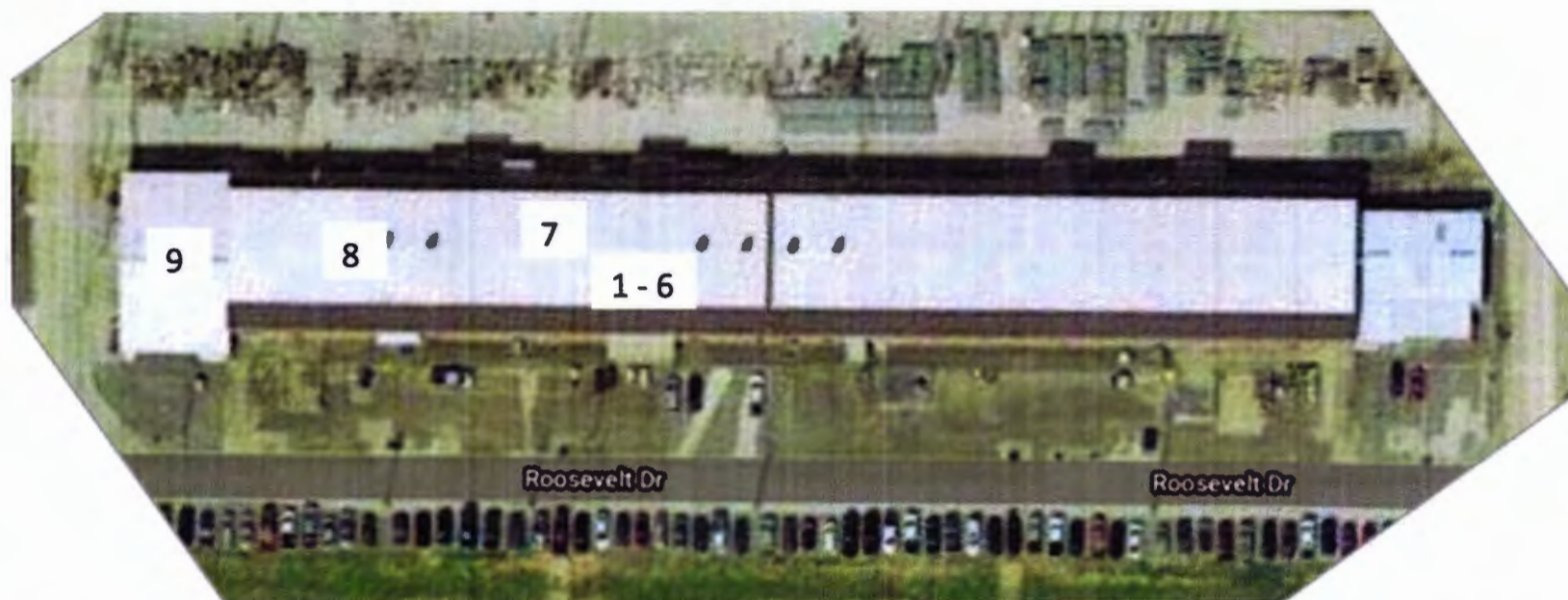
**Figure 2.** ANAD0200419Ni63 surveyed Building 277 location satellite view; background reference samples; M88 ACADA units never stored or used in this building

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**Figure 3.** ANAD0200419Ni63 surveyed building locations, line drawing (Building 277 not included in drawing)





**Figure 4.** ANAD0200419Ni63 Building 105 interior survey locations; background reference samples, M88 ACADA units not used in this building





**Figure 5.** ANAD0200419Ni63 Building 277 interior survey locations background reference samples; M88 ACADA units never stored or used in this building

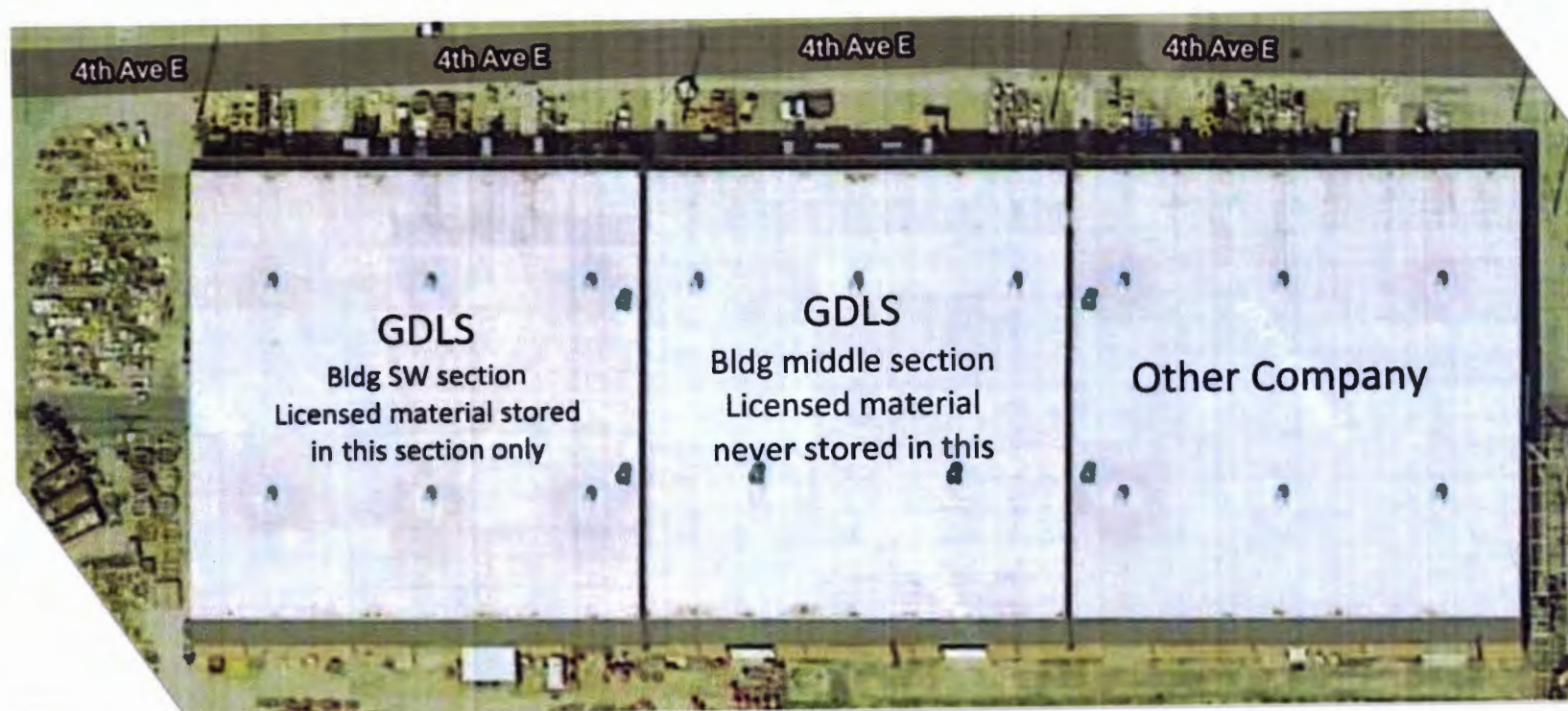
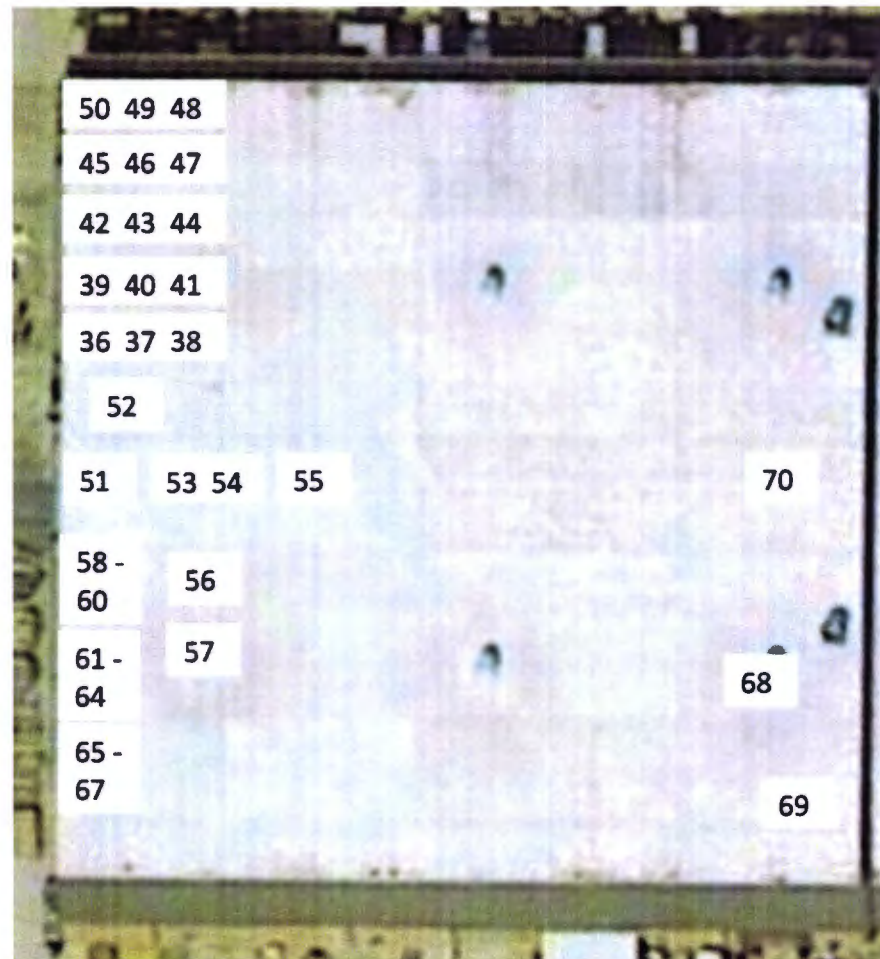


Figure 6. ANAD0200419Ni63 Building 134 GDLS occupied facilities



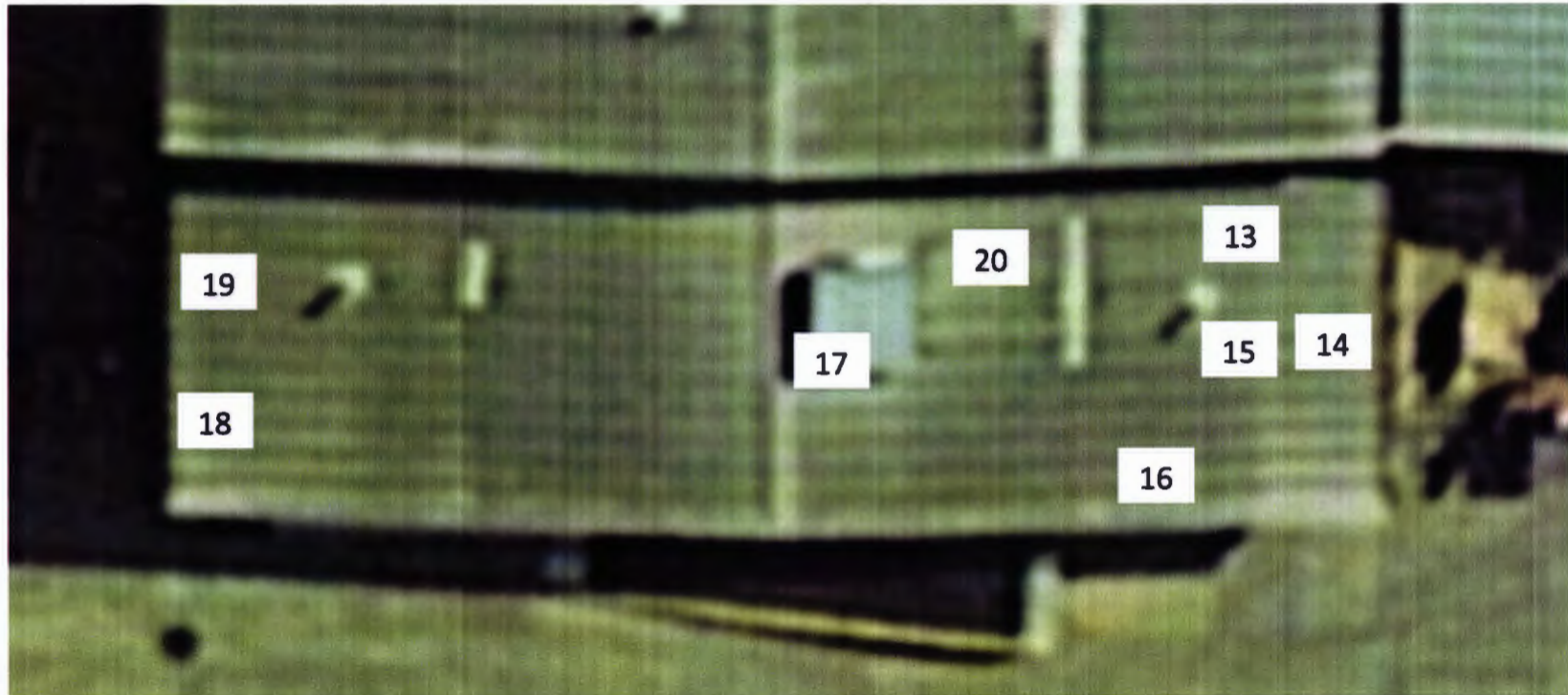
**Figure 7.** ANAD0200419Ni63 Building 134 SW section interior survey locations





**Figure 8.** ANAD0200419Ni63 Building 414 interior survey locations

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**Figure 9.** ANAD0200419Ni63 Building 414 Materials Warehouse interior survey locations; M88 ACADA storage and point of issue to Stryker New Build, Station 18

Sample						
<i>ID</i>	<i>Type</i>	<i>Wipe Area (cm<sup>2</sup>)</i>	<i>Date</i>	<i>Building No.</i>	<i>Loction No.</i>	<i>Description</i>
ANAD01	Surface Wipe	0	6-Feb-19	105	1	Engraving Room, desktop (background ref)
ANAD02	Surface Wipe	0	6-Feb-19	105	2	Engraving Room, desktop (background ref)
ANAD03	Surface Wipe	0	6-Feb-19	105	3	Engraving Room, desktop (background ref)
ANAD04	Surface Wipe	300	6-Feb-19	105	4	Engraving Room, floor at desk, carpet (background ref)
ANAD05	Surface Wipe	300	6-Feb-19	105	5	Engineering Office Area, floor, carpet (runner) (background ref)
ANAD06	Surface Wipe	300	6-Feb-19	105	6	Engineering Office Area, floor, tile (background ref)
ANAD07	Surface Wipe	300	6-Feb-19	105	7	Facilities Maintenance Shop, floor, tile (background ref)
ANAD08	Surface Wipe	300	6-Feb-19	105	8	Warehouse Area, floor, tile (background ref)
ANAD09	Surface Wipe	300	6-Feb-19	105	9	Main Office, floor, carpet (background ref)
ANAD10	Surface Wipe	300	6-Feb-19	277	10	USG Stryker Warehouse, floor, concrete (background ref)
ANAD11	Surface Wipe	300	6-Feb-19	277	11	USG Stryker Warehouse, floor, concrete (background ref)
ANAD12	Surface Wipe	300	6-Feb-19	277	12	USG Stryker Warehouse, floor, concrete (background ref)
ANAD13	Surface Wipe	300	6-Feb-19	414	13	Materials Warehouse, floor, concrete M88 ACADA storage locker former location
ANAD14	Surface Wipe	300	6-Feb-19	414	14	Materials Warehouse, floor, concrete materials sliding door adjacent to M88 ACADA former storage locker location
ANAD15	Surface Wipe	300	6-Feb-19	414	15	Materials Warehouse, floor, concrete general area in front of M88 ACADA former storage locker location
ANAD16	Surface Wipe	300	6-Feb-19	414	16	Materials Warehouse, floor, concrete, warehouse desk general area
ANAD17	Surface Wipe	300	6-Feb-19	414	17	Materials Warehouse, floor, concrete, main aisleway general area
ANAD18	Surface Wipe	300	6-Feb-19	414	18	Materials Warehouse, floor, concrete, materials sliding door general area
ANAD19	Surface Wipe	300	6-Feb-19	414	19	Materials Warehouse, floor, concrete, general area
ANAD20	Surface Wipe	300	6-Feb-19	414	20	Materials Warehouse, floor, concrete, cart storage, general area

**Table 1.** ANAD020419Ni63 wipe sample identification



Sample						
ID	Type	Wipe Area (cm <sup>2</sup> )	Date	Building No.	Loction No.	Description
ANAD21	Surface Wipe	300	6-Feb-19	414	21	Stryker New Build, Station 18, floor, concrete, adjacent to aisleway (vehicle rear hatch position)
ANAD22	Surface Wipe	300	6-Feb-19	414	22	Stryker New Build, Station 18, floor, concrete, (vehicle left side facing rear to front)
ANAD23	Surface Wipe	300	6-Feb-19	414	23	Stryker New Build, Station 18, floor, concrete, (vehicle right side facing rear to front)
ANAD24	Surface Wipe	300	6-Feb-19	414	24	Stryker New Build, Station 18, floor, concrete, (vehicle front left side facing rear to front)
ANAD25	Surface Wipe	300	6-Feb-19	414	25	Stryker New Build, Station 18, floor, concrete, (vehicle front right side facing rear to front)
ANAD26	Surface Wipe	300	6-Feb-19	414	26	Stryker New Build, main aisleway, floor, concrete
ANAD27	Surface Wipe	300	6-Feb-19	414	27	Stryker New Build, main aisleway, floor, concrete
ANAD28	Surface Wipe	300	6-Feb-19	414	28	Stryker New Build, main aisleway, floor, concrete
ANAD29	Surface Wipe	300	6-Feb-19	414	29	Stryker New Build, main aisleway, floor, concrete
ANAD30	Surface Wipe	300	6-Feb-19	414	30	Stryker New Build, main aisleway, floor, concrete
ANAD31	Surface Wipe	300	6-Feb-19	414	31	Break Area / Kitchen, floor, tile
ANAD32	Surface Wipe	300	6-Feb-19	414	32	Break Area / Kitchen, floor, tile
ANAD33	Surface Wipe	300	6-Feb-19	414	33	Break Area / Kitchen, floor, tile
ANAD34	Surface Wipe	300	6-Feb-19	414	34	Break Area / Kitchen, floor, tile
ANAD35	Surface Wipe	300	6-Feb-19	414	35	Break Area / Kitchen, floor, tile
ANAD36	Surface Wipe	300	7-Feb-19	134	36	Secure Room, floor, concrete, at personnel door
ANAD37	Surface Wipe	300	7-Feb-19	134	37	Secure Room, floor, concrete, at materials door
ANAD38	Surface Wipe	300	7-Feb-19	134	38	Secure Room, floor, concrete, adjacent to materials door
ANAD39	Surface Wipe	300	7-Feb-19	134	39	Secure Room, floor, concrete, middle, under rack shelving
ANAD40	Surface Wipe	300	7-Feb-19	134	40	Secure Room, floor, concrete, middle, in main aisle

Table 1. ANAD020419Ni63 wipe sample identification

Sample						
ID	Type	Wipe Area (cm <sup>2</sup> )	Date	Building No.	Loction No.	Description
ANAD41	Surface Wipe	300	7-Feb-19	134	41	Secure Room, floor, concrete, middle, general area
ANAD42	Surface Wipe	300	7-Feb-19	134	42	Secure Room, floor, concrete, middle, under rack shelving
ANAD43	Surface Wipe	300	7-Feb-19	134	43	Secure Room, floor, concrete, middle, in main aisle
ANAD44	Surface Wipe	300	7-Feb-19	134	44	Secure Room, floor, concrete, middle, under rack shelving
ANAD45	Surface Wipe	300	7-Feb-19	134	45	Secure Room, floor, concrete, middle, general area
ANAD46	Surface Wipe	300	7-Feb-19	134	46	Secure Room, floor, concrete, middle, in main aisle
ANAD47	Surface Wipe	300	7-Feb-19	134	47	Secure Room, floor, concrete, middle, under rack shelving
ANAD48	Surface Wipe	300	7-Feb-19	134	48	Secure Room, floor, concrete, back, general area
ANAD49	Surface Wipe	300	7-Feb-19	134	49	Secure Room, floor, concrete, back, in main aisle
ANAD50	Surface Wipe	300	7-Feb-19	134	50	Secure Room, floor, concrete, back, general area
ANAD51	Surface Wipe	300	7-Feb-19	134	51	Shipping / Receiving Dock, floor, concrete at loading door, General area
ANAD52	Surface Wipe	300	7-Feb-19	134	52	Shipping / Receiving Dock, floor, concrete at Secure Room material door, General area
ANAD53	Surface Wipe	300	7-Feb-19	134	53	Shipping / Receiving Dock, loading ramp floor (platform), steel (painted)
ANAD54	Surface Wipe	300	7-Feb-19	134	54	Shipping / Receiving Dock, floor, concrete, loading ramp, on slope
ANAD55	Surface Wipe	300	7-Feb-19	134	55	Shipping / Receiving Dock, floor, concrete, at loading ramp base
ANAD56	Surface Wipe	300	7-Feb-19	134	56	Shipping / Receiving Dock, floor, concrete, packaging area, general area
ANAD57	Surface Wipe	300	7-Feb-19	134	57	Shipping / Receiving Dock, floor, concrete, packaging area, general area
ANAD58	Surface Wipe	300	7-Feb-19	134	58	Materials Supervisor Office, floor, tile
ANAD59	Surface Wipe	300	7-Feb-19	134	59	Materials Office, floor, tile, general area
ANAD60	Surface Wipe	300	7-Feb-19	134	60	Materials Office, floor, tile, general area

**Table 1.** ANAD020419Ni63 wipe sample identification

Sample						
<i>ID</i>	<i>Type</i>	<i>Wipe Area (cm²)</i>	<i>Date</i>	<i>Building No.</i>	<i>Location No.</i>	<i>Description</i>
ANAD61	Surface Wipe	300	7-Feb-19	134	61	Break Area, floor, tile, general area
ANAD62	Surface Wipe	300	7-Feb-19	134	62	Break Area, floor, tile, at refrigerator
ANAD63	Surface Wipe	300	7-Feb-19	134	63	Break Area, floor, tile, at microwave oven
ANAD64	Surface Wipe	300	7-Feb-19	134	64	Break Area, floor, tile, at vending machine
ANAD65	Surface Wipe	300	7-Feb-19	134	65	Lav/Fountain/Ice Mach hallway, floor, tile, at men's room door
ANAD66	Surface Wipe	300	7-Feb-19	134	66	Lav/Fountain/Ice Mach hallway, floor, tile, at drinking fountain
ANAD67	Surface Wipe	300	7-Feb-19	134	67	Lav/Fountain/Ice Mach hallway, floor, tile, at women's room door
ANAD68	Surface Wipe	300	7-Feb-19	134	68	Warehouse, Sec-1, Bay 50, floor, concrete, adjacent to main aisle (old M88 ACADA storage area)
ANAD69	Surface Wipe	300	7-Feb-19	134	69	Warehouse, Sec-1, Bay 50, floor, concrete, under rack shelving (old M88 ACADA storage area)
ANAD70	Surface Wipe	300	7-Feb-19	134	70	Warehouse, Sec-1, Bay 50, floor, concrete, main aisleway, general area (old M88 ACADA storage area)

**Table 1.** ANAD020419Ni63 wipe sample identification



Sample		Sample Gross Activity						Sample and Surface Specific Activity						Surface B-γ Radiation Exposure Rate* (Contact)	
ID	Location No.	Counting System Background	Wipe, Reported	Wipe, Reported	Sealed Source Leak Limit			Wipe Area	Wipe, Reported	Sampled surface, 1.00 removal assumed	Sampled surface, 0.1 removal assumed	DA PAM 385-24 Screening Level	NUREG 1757 V1 R2 Screening Level	mR/hr	μSv/h
		cpm	cpm	dpm	Bq	dpm	μCi	cm²	dpm/100 cm²	dpm/100 cm²	dpm/100 cm²	dpm/100 cm²	dpm/100 cm²		
ANAD01	1	19.73	NR	<5	185	11,100	0.005	0	<2	<2	<20	600,000	1,800,000	-	-
ANAD02	2		NR	<5				0	<2	<2	<20			-	-
ANAD03	3		NR	<5				0	<2	<2	<20			-	-
ANAD04	4		NR	<5				300	<2	<2	<20			0.009	0.09
ANAD05	5		NR	<5				300	<2	<2	<20			0.008	0.08
ANAD06	6		NR	<5				300	<2	<2	<20			0.009	0.09
ANAD07	7		NR	<5				300	<2	<2	<20			0.012	0.12
ANAD08	8		NR	<5				300	<2	<2	<20			0.009	0.09
ANAD09	9		NR	<5				300	<2	<2	<20			0.012	0.12
ANAD10	10		NR	<5				300	<2	<2	<20			0.007	0.07
ANAD11	11		NR	<5				300	<2	<2	<20			0.007	0.07
ANAD12	12		NR	<5				300	<2	<2	<20			0.008	0.08
ANAD13	13		NR	<5				300	<2	<2	<20			0.009	0.09
ANAD14	14		NR	<5				300	<2	<2	<20			0.007	0.07
ANAD15	15		NR	<5				300	<2	<2	<20			0.008	0.08
ANAD16	16		NR	<5				300	<2	<2	<20			0.005	0.05
ANAD17	17		NR	<5				300	<2	<2	<20			0.012	0.12
ANAD18	18		NR	<5				300	<2	<2	<20			0.008	0.08
ANAD19	19		NR	<5				300	<2	<2	<20			0.007	0.07
ANAD20	20		NR	<5				300	<2	<2	<20			0.009	0.09

**Table 2.** ANAD020419Ni63 wipe sample analysis data; sealed source leak limit, surface radiation exposure rates, and U.S. Department of the Army and U.S. Nuclear Regulatory Commission surface contamination screening levels for clearance for unrestricted use are listed for reference

\*Survey meter: Radiation Alert, Inspector, S/N 17909, Cal: 10/21/2015, Cal Due: 10/21/2016 (status on dates of survey), open beta window; post survey cal check (as received) shows instrument was within calibration parameters, no change made to calibration, Cal Date: 3/12/2019, Cal Due Date: 3/12/2022 (S.E. International, Inc. Certificate no. 19-561)

Sample		Sample Gross Activity						Sample and Surface Specific Activity						Surface $\beta$ - $\gamma$ Radiation Exposure Rate* (Contact)	
ID	Location No.	Counting System Background	Wipe, Reported	Wipe, Reported	Sealed Source Leak Limit			Wipe Area	Wipe, Reported	Sampled surface, 1.00 removal assumed	Sampled surface, 0.1 removal assumed	DA PAM 385-24 Screening Level	NUREG 1757 V1 R2 Screening Level		
		cpm	cpm	dpm	Bq	dpm	$\mu$ Ci	cm <sup>2</sup>	dpm/100 cm <sup>2</sup>	dpm/100 cm <sup>2</sup>	dpm/100 cm <sup>2</sup>	dpm/100 cm <sup>2</sup>	dpm/100 cm <sup>2</sup>	mR/hr	$\mu$ Sv/hr
ANAD21	21	19.73	NR	<5	185	11,100	0.005	300	<2	<2	<20	600,000	1,800,000	0.007	0.07
ANAD22	22		NR	<5				300	<2	<2	<20			0.010	0.10
ANAD23	23		NR	<5				300	<2	<2	<20			0.007	0.07
ANAD24	24		NR	<5				300	<2	<2	<20			0.004	0.04
ANAD25	25		NR	<5				300	<2	<2	<20			0.009	0.09
ANAD26	26		NR	<5				300	<2	<2	<20			0.005	0.05
ANAD27	27		NR	<5				300	<2	<2	<20			0.007	0.07
ANAD28	28		NR	<5				300	<2	<2	<20			0.007	0.07
ANAD29	29		NR	<5				300	<2	<2	<20			0.009	0.09
ANAD30	30		NR	<5				300	<2	<2	<20			0.006	0.06
ANAD31	31		NR	<5				300	<2	<2	<20			0.011	0.11
ANAD32	32		NR	<5				300	<2	<2	<20			0.008	0.08
ANAD33	33		NR	<5				300	<2	<2	<20			0.011	0.11
ANAD34	34		NR	<5				300	<2	<2	<20			0.010	0.10
ANAD35	35		NR	<5				300	<2	<2	<20			0.011	0.11
ANAD36	36		NR	<5				300	<2	<2	<20			0.012	0.12
ANAD37	37		NR	<5				300	<2	<2	<20			0.012	0.12
ANAD38	38		NR	<5				300	<2	<2	<20			0.011	0.11
ANAD39	39		NR	<5				300	<2	<2	<20			0.008	0.08
ANAD40	40		NR	<5				300	<2	<2	<20			0.010	0.10

**Table 2.** ANAD020419Ni63 wipe sample analysis data; sealed source leak limit, surface radiation exposure rates, and U.S. Department of the Army and U.S. Nuclear Regulatory Commission surface contamination screening levels for clearance for unrestricted use are listed for reference

\*Survey meter: Radiation Alert, Inspector, S/N 17909, Cal: 10/21/2015, Cal Due: 10/21/2016 (status on dates of survey), open beta window; post survey cal check (as received) shows instrument was within calibration parameters, no change made to calibration, Cal Date: 3/12/2019, Cal Due Date: 3/12/2022 (S.E. International, Inc. Certificate no. 19-561)

Sample		Sample Gross Activity						Sample and Surface Specific Activity						Surface $\beta$ - $\gamma$ Radiation Exposure Rate* (Contact)	
ID	Location No.	Counting System Background cpm	Wipe, Reported cpm	Wipe, Reported dpm	Sealed Source Leak Limit			Wipe Area cm <sup>2</sup>	Wipe, Reported dpm/100 cm <sup>2</sup>	Sampled surface, 1.00 removal assumed dpm/100 cm <sup>2</sup>	Sampled surface, 0.1 removal assumed dpm/100 cm <sup>2</sup>	DA PAM 385-24 Screening Level dpm/100 cm <sup>2</sup>	NUREG 1757 V1 R2 Screening Level dpm/100 cm <sup>2</sup>	mR/hr	$\mu$ Sv/h
ANAD41	41	19.73	NR	<5	185	11,100	0.005	300	<2	<2	<20	600,000	1,800,000	0.011	0.11
ANAD42	42		NR	<5				300	<2	<2	<20			0.009	0.09
ANAD43	43		NR	<5				300	<2	<2	<20			0.008	0.08
ANAD44	44		NR	<5				300	<2	<2	<20			0.009	0.09
ANAD45	45		NR	<5				300	<2	<2	<20			0.010	0.10
ANAD46	46		NR	<5				300	<2	<2	<20			0.011	0.11
ANAD47	47		NR	<5				300	<2	<2	<20			0.008	0.08
ANAD48	48		NR	<5				300	<2	<2	<20			0.011	0.11
ANAD49	49		NR	<5				300	<2	<2	<20			0.008	0.08
ANAD50	50		NR	<5				300	<2	<2	<20			0.011	0.11
ANAD51	51		NR	<5				300	<2	<2	<20			0.007	0.07
ANAD52	52		NR	<5				300	<2	<2	<20			0.009	0.09
ANAD53	53		NR	<5				300	<2	<2	<20			0.008	0.08
ANAD54	54		NR	<5				300	<2	<2	<20			0.007	0.07
ANAD55	55		NR	<5				300	<2	<2	<20			0.004	0.04
ANAD56	56		NR	<5				300	<2	<2	<20			0.007	0.07
ANAD57	57		NR	<5				300	<2	<2	<20			0.008	0.08
ANAD58	58		NR	<5				300	<2	<2	<20			0.004	0.04
ANAD59	59		NR	<5				300	<2	<2	<20			0.009	0.09
ANAD60	60		NR	<5				300	<2	<2	<20			0.009	0.09

**Table 2.** ANAD020419Ni63 wipe sample analysis data; sealed source leak limit, surface radiation exposure rates, and U.S. Department of the Army and U.S. Nuclear Regulatory Commission surface contamination screening levels for clearance for unrestricted use are listed for reference

\*Survey meter: Radiation Alert, Inspector, S/N 17909, Cal: 10/21/2015, Cal Due: 10/21/2016 (status on dates of survey), open beta window, post survey cal check (as received) shows instrument was within calibration parameters, no change made to calibration, Cal Date: 3/12/2019, Cal Due Date: 3/12/2022 (S.E. International, Inc. Certificate no. 19-561)



Sample		Sample Gross Activity						Sample and Surface Specific Activity						Surface $\beta$ - $\gamma$ Radiation Exposure Rate* (Contact)	
ID	Location No.	Counting System Background	Wipe, Reported	Wipe, Reported	Sealed Source Leak Limit			Wipe Area	Wipe, Reported	Sampled surface, 1.00 removal assumed	Sampled surface, 0.1 removal assumed	DA PAM 385-24 Screening Level	NUREG 1757 V1 R2 Screening Level		
		cpm	cpm	dpm	Bq	dpm	$\mu$ Ci	cm <sup>2</sup>	dpm/100 cm <sup>2</sup>	dpm/100 cm <sup>2</sup>	dpm/100 cm <sup>2</sup>	dpm/100 cm <sup>2</sup>	dpm/100 cm <sup>2</sup>	mR/hr	$\mu$ Sv/h
ANAD61	61	19.73	NR	<5	185	11,100	0.005	300	<2	<2	<20	600,000	1,800,000	0.010	0.10
ANAD62	62		NR	<5				300	<2	<2	<20			0.008	0.08
ANAD63	63		NR	<5				300	<2	<2	<20			0.005	0.05
ANAD64	64		NR	<5				300	<2	<2	<20			0.005	0.05
ANAD65	65		NR	<5				300	<2	<2	<20			0.009	0.09
ANAD66	66		NR	<5				300	<2	<2	<20			0.009	0.09
ANAD67	67		NR	<5				300	<2	<2	<20			0.009	0.09
ANAD68	68		NR	<5				300	<2	<2	<20			0.012	0.12
ANAD69	69		NR	<5				300	<2	<2	<20			0.010	0.10
ANAD70	70		NR	<5				300	<2	<2	<20			0.009	0.09

**Table 2.** ANAD020419Ni63 wipe sample analysis data; sealed source leak limit, and U.S. Department of the Army and U.S. Nuclear Regulatory Commission surface contamination screening levels for clearance for unrestricted use are listed for reference

\*Survey meter: Radiation Alert, Inspector, S/N 17909, Cal: 10/21/2015, Cal Due: 10/21/2016 (status on dates of survey), open beta window, post survey cal check (as received) shows instrument was within calibration parameters, no change made to calibration, Cal Date: 3/12/2019, Cal Due Date: 3/12/2022 (S.E. International, Inc. Certificate no. 19-561)

Project No.	Sample		Area Wiped cm <sup>2</sup>	Description	Number of Samples At Or Above		
	ID	Type			Sealed Source Leak Limit	DA PAM 385-24 Screening Level	NUREG 1757 V1 R2 Screening Level
CO022409Ni63	CO01	Field Blank	NA	Field blank, leak test swab	0	0	0
CO022409Ni63	CO02	Field Blank	NA	Field blank, surface wipe	0	0	0
SHEL092817Ni63	SHEL01	Field Blank	NA	Sterling Heights Complex EHS Office and in-field	0	0	0
SHEL092817Ni63	SHEL02	Field Blank	NA	Sterling Heights Complex EHS Office and in-field	0	0	0
CO022409Ni63	CO04	Leak Wipe	NA	ICV-0270-03 M88 ACADA S/N Y14-D-21298, Y14-M-21298 Inlet Port	0	0	0
CO022409Ni63	CO05	Leak Wipe	NA	ICV-0270-03 M88 ACADA S/N Y14-D-21298, Y14-M-21298 Exhaust Port	0	0	0
CO090616H3Ni63	141816	Leak /Surface Wipe	100	Detector, Chemical Agent, Y14-D-19396	0	0	0
CO090616H3Ni63	141817	Leak /Surface Wipe	100	Detector, Chemical Agent, Y14-D-17540	0	0	0
CO090616H3Ni63	141818	Leak /Surface Wipe	100	Detector, Chemical Agent, Y14-D-19141	0	0	0
CO090616H3Ni63	141819	Leak /Surface Wipe	100	Detector, Chemical Agent, Y14-D-17261	0	0	0
CO090616H3Ni63	141820	Leak /Surface Wipe	100	Detector, Chemical Agent, Y14-D-20668	0	0	0
CO090616H3Ni63	141834	Leak /Surface Wipe	100	Detector, Chemical Agent, Y14-D-07832	0	0	0
CO090616H3Ni63	141835	Leak /Surface Wipe	100	Detector, Chemical Agent, Y14-D-30669	0	0	0
CO090616H3Ni63	141836	Leak /Surface Wipe	100	Detector, Chemical Agent, Y14-D-31236	0	0	0
CO090616H3Ni63	141837	Leak /Surface Wipe	100	Detector, Chemical Agent, Y14-D-30908	0	0	0
CO090616H3Ni63	141838	Leak /Surface Wipe	100	Detector, Chemical Agent, Y14-D-20571	0	0	0
CO090616H3Ni63	141839	Leak /Surface Wipe	100	Detector, Chemical Agent, Y14-D-21298	0	0	0
CO022409Ni63	CO12	Surface Wipe	100	ICV-0270-03 Commander's Station Roof	0	0	0
CO022409Ni63	CO13	Surface Wipe	100	ICV-0270-03 Commander's Station Bulkhead	0	0	0
CO022409Ni63	CO03	Surface Wipe	100	ICV-0270-03 M88 ACADA S/N Y14-D-21298, Y14-M-21298 Top Surface	0	0	0
CO022409Ni63	CO06	Surface Wipe	100	ICV-0270-03 Tunnel Roof	0	0	0
CO022409Ni63	CO07	Surface Wipe	100	ICV-0270-03 Tunnel Bulkhead	0	0	0
CO022409Ni63	CO08	Surface Wipe	100	ICV-0270-03 Tunnel Floor	0	0	0
CO022409Ni63	CO09	Surface Wipe	100	ICV-0270-03 Driver's Station Roof	0	0	0
CO022409Ni63	CO10	Surface Wipe	100	ICV-0270-03 Driver's Station Bulkhead	0	0	0
CO022409Ni63	CO11	Surface Wipe	100	ICV-0270-03 Driver's Station Floor	0	0	0
CO022409Ni63	CO14	Surface Wipe	100	ICV-0270-03 Commander's Station Floor	0	0	0
CO022409Ni63	CO15	Surface Wipe	100	ICV-0270-03 Troop Compartment Roof	0	0	0
CO022409Ni63	CO16	Surface Wipe	100	ICV-0270-03 Troop Compartment Bulkhead	0	0	0
CO022409Ni63	CO17	Surface Wipe	100	ICV-0270-03 Troop Compartment Floor	0	0	0

**Table 3.** Compiled summary of current and historical leak tests and surface contamination wipe survey data for Ni-63 associated with GDLS possession of M88 ACADA units

Project No.	Sample		Area Wiped cm <sup>2</sup>	Description	Number of Samples At Or Above		
	ID	Type			Sealed Source Leak Limit	DA PAM 385-24 Screening Level	NUREG 1757 V1 R2 Screening Level
CO022409Ni63	CO18	Surface Wipe	100	ICV-0270-03 Engine Compartment, adjacent to tunnel Bulkhead	0	0	0
CO022409Ni63	CO19	Surface Wipe	100	ICV-0270-03 Exterior, adjacent to ICV-0270-03 Driver's Hatch, Hull Roof	0	0	0
CO022409Ni63	CO20	Surface Wipe	100	ICV-0270-03 Exterior, adjacent to port (left) side hatch, Hull Side	0	0	0
CO090616H3Ni63	141815	Surface Wipe	100	Floor in front of Source Vault	0	0	0
CO090616H3Ni63	141821	Surface Wipe	100	Source Vault Door Interior Side	0	0	0
CO090616H3Ni63	141822	Surface Wipe	100	Source Vault Shelf G	0	0	0
CO090616H3Ni63	141823	Surface Wipe	100	Source Vault Shelf E	0	0	0
CO090616H3Ni63	141824	Surface Wipe	100	Source Vault Shelf D	0	0	0
CO090616H3Ni63	141825	Surface Wipe	100	Source Vault Shelf B	0	0	0
CO090616H3Ni63	141826	Surface Wipe	100	Source Vault Shelf C	0	0	0
SHEL092817Ni63	SHEL03	Surface Wipe	100	USG Crib, former M88 storage location floor	0	0	0
SHEL092817Ni63	SHEL04	Surface Wipe	100	USG Crib, general area floor	0	0	0
SHEL092817Ni63	SHEL05	Surface Wipe	100	USG Crib, former M88 storage location floor	0	0	0
SHEL092817Ni63	SHEL06	Surface Wipe	100	USG Crib, general area floor	0	0	0
SHEL092817Ni63	SHEL07	Surface Wipe	100	Val/Ver Bay, general area	0	0	0
SHEL092817Ni63	SHEL08	Surface Wipe	100	Val/Ver Bay, general area	0	0	0
SHEL092817Ni63	SHEL09	Surface Wipe	100	Val/Ver Bay, general area	0	0	0
SHEL092817Ni63	SHEL10	Surface Wipe	100	Val/Ver Bay, general area	0	0	0
SHEL092817Ni63	SHEL11	Surface Wipe	100	USG Crib, found unit Y14-M/Y14-D-19658 temp storage area	0	0	0
SHEL092817Ni63	SHEL12	Surface Wipe	100	USG Crib, found unit Y14-M/Y14-D-19658 temp storage area	0	0	0
SHEL092817Ni63	SHEL13	Surface Wipe	100	Warehouse, found unit Y14-M/Y14-D-19658 temp staging area	0	0	0
SHEL092817Ni63	SHEL14	Surface Wipe	100	Warehouse, found unit Y14-M/Y14-D-19658 general storage area	0	0	0
SHEL092817Ni63	SHEL15	Surface Wipe	100	Kitchen / Dining / Break area, general area floor	0	0	0
SHEL092817Ni63	SHEL16	Surface Wipe	100	Kitchen / Dining / Break area, counter / sink area floor	0	0	0
SHEL092817Ni63	SHEL17	Surface Wipe	100	USG Office Area main aisleway floor (carpeted)	0	0	0
SHEL092817Ni63	SHEL18	Surface Wipe	100	USG Office Area main aisleway floor (carpeted)	0	0	0

**Table 3.** Compiled summary of current and historical leak tests and surface contamination wipe survey data for Ni-63 associated with GDLS possession of M88 ACADA units

Project No.	Sample		Area Wiped cm <sup>2</sup>	Description	Number of Samples At Or Above		
	ID	Type			Sealed Source Leak Limit	DA PAM 385-24 Screening Level	NUREG 1757 V1 R2 Screening Level
SHEL092817Ni63	SHEL19	Surface Wipe	100	*USG M88 ACADA storage locker inside, bottom shelf/floor	0	0	0
SHEL092817Ni63	SHEL20	Surface Wipe	300	*USG M88 ACADA storage locker inside, 2nd shelf & ACADA tops	0	0	0
ANAD020419Ni63	ANAD01	Surface Wipe	0	Engraving Room, desktop (background ref)	0	-	-
ANAD020419Ni63	ANAD02	Surface Wipe	0	Engraving Room, desktop (background ref)	0	-	-
ANAD020419Ni63	ANAD03	Surface Wipe	0	Engraving Room, desktop (background ref)	0	-	-
ANAD020419Ni63	ANAD04	Surface Wipe	300	Engraving Room, floor at desk, carpet (background ref)	0	0	0
ANAD020419Ni63	ANAD05	Surface Wipe	300	Engineering Office Area, floor, carpet (runner) (background ref)	0	0	0
ANAD020419Ni63	ANAD06	Surface Wipe	300	Engineering Office Area, floor, tile (background ref)	0	0	0
ANAD020419Ni63	ANAD07	Surface Wipe	300	Facilities Maintenance Shop, floor, tile (background ref)	0	0	0
ANAD020419Ni63	ANAD08	Surface Wipe	300	Warehouse Area, floor, tile (background ref)	0	0	0
ANAD020419Ni63	ANAD09	Surface Wipe	300	Main Office, floor, carpet (background ref)	0	0	0
ANAD020419Ni63	ANAD10	Surface Wipe	300	USG Stryker Warehouse, floor, concrete (background ref)	0	0	0
ANAD020419Ni63	ANAD11	Surface Wipe	300	USG Stryker Warehouse, floor, concrete (background ref)	0	0	0
ANAD020419Ni63	ANAD12	Surface Wipe	300	USG Stryker Warehouse, floor, concrete (background ref)	0	0	0
ANAD020419Ni63	ANAD13	Surface Wipe	300	Materials Warehouse, floor, concrete M88 ACADA storage locker former location	0	0	0
ANAD020419Ni63	ANAD14	Surface Wipe	300	Materials Warehouse, floor, concrete materials sliding door adjacent to M88 ACADA former storage locker location	0	0	0
ANAD020419Ni63	ANAD15	Surface Wipe	300	Materials Warehouse, floor, concrete general area in front of M88 ACADA former storage locker location	0	0	0
ANAD020419Ni63	ANAD16	Surface Wipe	300	Materials Warehouse, floor, concrete, warehouse desk general area	0	0	0
ANAD020419Ni63	ANAD17	Surface Wipe	300	Materials Warehouse, floor, concrete, main aisleway general area	0	0	0
ANAD020419Ni63	ANAD18	Surface Wipe	300	Materials Warehouse, floor, concrete, materials sliding door general area	0	0	0

**Table 3.** Compiled summary of current and historical leak tests and surface contamination wipe survey data for Ni-63 associated with GDLS possession of M88 ACADA units



Project No.	Sample		Area Wiped cm <sup>2</sup>	Description	Number of Samples At Or Above		
	ID	Type			Sealed Source Leak Limit	DA PAM 385-24 Screening Level	NUREG 1757 V1 R2 Screening Level
ANAD020419Ni63	ANAD19	Surface Wipe	300	Materials Warehouse, floor, concrete, general area	0	0	0
ANAD020419Ni63	ANAD20	Surface Wipe	300	Materials Warehouse, floor, concrete, cart storage, general area	0	0	0
ANAD020419Ni63	ANAD21	Surface Wipe	300	Stryker New Build, Station 18, floor, concrete, adjacent to aisleway (vehicle rear hatch position)	0	0	0
ANAD020419Ni63	ANAD22	Surface Wipe	300	Stryker New Build, Station 18, floor, concrete, (vehicle left side facing rear to front)	0	0	0
ANAD020419Ni63	ANAD23	Surface Wipe	300	Stryker New Build, Station 18, floor, concrete, (vehicle right side facing rear to front)	0	0	0
ANAD020419Ni63	ANAD24	Surface Wipe	300	Stryker New Build, Station 18, floor, concrete, (vehicle front left side facing rear to front)	0	0	0
ANAD020419Ni63	ANAD25	Surface Wipe	300	Stryker New Build, Station 18, floor, concrete, (vehicle front right side facing rear to front)	0	0	0
ANAD020419Ni63	ANAD26	Surface Wipe	300	Stryker New Build, main aisleway, floor, concrete	0	0	0
ANAD020419Ni63	ANAD27	Surface Wipe	300	Stryker New Build, main aisleway, floor, concrete	0	0	0
ANAD020419Ni63	ANAD28	Surface Wipe	300	Stryker New Build, main aisleway, floor, concrete	0	0	0
ANAD020419Ni63	ANAD29	Surface Wipe	300	Stryker New Build, main aisleway, floor, concrete	0	0	0
ANAD020419Ni63	ANAD30	Surface Wipe	300	Stryker New Build, main aisleway, floor, concrete	0	0	0
ANAD020419Ni63	ANAD31	Surface Wipe	300	Break Area / Kitchen, floor, tile	0	0	0
ANAD020419Ni63	ANAD32	Surface Wipe	300	Break Area / Kitchen, floor, tile	0	0	0
ANAD020419Ni63	ANAD33	Surface Wipe	300	Break Area / Kitchen, floor, tile	0	0	0
ANAD020419Ni63	ANAD34	Surface Wipe	300	Break Area / Kitchen, floor, tile	0	0	0
ANAD020419Ni63	ANAD35	Surface Wipe	300	Break Area / Kitchen, floor, tile	0	0	0
ANAD020419Ni63	ANAD36	Surface Wipe	300	Secure Room, floor, concrete, at personnel door	0	0	0
ANAD020419Ni63	ANAD37	Surface Wipe	300	Secure Room, floor, concrete, at materials door	0	0	0
ANAD020419Ni63	ANAD38	Surface Wipe	300	Secure Room, floor, concrete, adjacent to materials door	0	0	0
ANAD020419Ni63	ANAD39	Surface Wipe	300	Secure Room, floor, concrete, middle, under rack shelving	0	0	0
ANAD020419Ni63	ANAD40	Surface Wipe	300	Secure Room, floor, concrete, middle, in main aisle	0	0	0
ANAD020419Ni63	ANAD41	Surface Wipe	300	Secure Room, floor, concrete, middle, general area	0	0	0
ANAD020419Ni63	ANAD42	Surface Wipe	300	Secure Room, floor, concrete, middle, under rack shelving	0	0	0

**Table 3.** Compiled summary of current and historical leak tests and surface contamination wipe survey data for Ni-63 associated with GDLS possession of M88 ACADA units

Project No.	Sample		Area Wiped cm <sup>2</sup>	Description	Number of Samples At Or Above		
	ID	Type			Sealed Source Leak Limit	DA PAM 385-24 Screening Level	NUREG 1757 V1 R2 Screening Level
ANAD020419Ni63	ANAD43	Surface Wipe	300	Secure Room, floor, concrete, middle, in main aisle	0	0	0
ANAD020419Ni63	ANAD44	Surface Wipe	300	Secure Room, floor, concrete, middle, under rack shelving	0	0	0
ANAD020419Ni63	ANAD45	Surface Wipe	300	Secure Room, floor, concrete, middle, general area	0	0	0
ANAD020419Ni63	ANAD46	Surface Wipe	300	Secure Room, floor, concrete, middle, in main aisle	0	0	0
ANAD020419Ni63	ANAD47	Surface Wipe	300	Secure Room, floor, concrete, middle, under rack shelving	0	0	0
ANAD020419Ni63	ANAD48	Surface Wipe	300	Secure Room, floor, concrete, back, general area	0	0	0
ANAD020419Ni63	ANAD49	Surface Wipe	300	Secure Room, floor, concrete, back, in main aisle	0	0	0
ANAD020419Ni63	ANAD50	Surface Wipe	300	Secure Room, floor, concrete, back, general area	0	0	0
ANAD020419Ni63	ANAD51	Surface Wipe	300	Shipping / Receiving Dock, floor, concrete at loading door, General area	0	0	0
ANAD020419Ni63	ANAD52	Surface Wipe	300	Shipping / Receiving Dock, floor, concrete at Secure Room material door, General area	0	0	0
ANAD020419Ni63	ANAD53	Surface Wipe	300	Shipping / Receiving Dock, loading ramp floor (platform), steel (painted)	0	0	0
ANAD020419Ni63	ANAD54	Surface Wipe	300	Shipping / Receiving Dock, floor, concrete, loading ramp, on slope	0	0	0
ANAD020419Ni63	ANAD55	Surface Wipe	300	Shipping / Receiving Dock, floor, concrete, at loading ramp base	0	0	0
ANAD020419Ni63	ANAD56	Surface Wipe	300	Shipping / Receiving Dock, floor, concrete, packaging area, general area	0	0	0
ANAD020419Ni63	ANAD57	Surface Wipe	300	Shipping / Receiving Dock, floor, concrete, packaging area, general area	0	0	0
ANAD020419Ni63	ANAD58	Surface Wipe	300	Materials Supervisor Office, floor, tile	0	0	0
ANAD020419Ni63	ANAD59	Surface Wipe	300	Materials Office, floor, tile, general area	0	0	0
ANAD020419Ni63	ANAD60	Surface Wipe	300	Materials Office, floor, tile, general area	0	0	0
ANAD020419Ni63	ANAD61	Surface Wipe	300	Break Area, floor, tile, general area	0	0	0
ANAD020419Ni63	ANAD62	Surface Wipe	300	Break Area, floor, tile, at refrigerator	0	0	0
ANAD020419Ni63	ANAD63	Surface Wipe	300	Break Area, floor, tile, at microwave oven	0	0	0
ANAD020419Ni63	ANAD64	Surface Wipe	300	Break Area, floor, tile, at vending machine	0	0	0
ANAD020419Ni63	ANAD65	Surface Wipe	300	Lav/Fountain/Ice Mach hallway, floor, tile, at men's room door	0	0	0

**Table 3.** Compiled summary of current and historical leak tests and surface contamination wipe survey data for Ni-63 associated with GDLS possession of M88 ACADA units

Project No.	Sample		Area Wiped cm <sup>2</sup>	Description	Number of Samples At Or Above		
	ID	Type			Sealed Source Leak Limit	DA PAM 385-24 Screening Level	NUREG 1757 V1 R2 Screening Level
ANAD020419Ni63	ANAD66	Surface Wipe	300	Lav/Fountain/Ice Mach hallway, floor, tile, at drinking fountain	0	0	0
ANAD020419Ni63	ANAD67	Surface Wipe	300	Lav/Fountain/Ice Mach hallway, floor, tile, at women's room door	0	0	0
ANAD020419Ni63	ANAD68	Surface Wipe	300	Warehouse, Sec-1, Bay 50, floor, concrete, adjacent to main aisle (old M88 ACADA storage area)	0	0	0
ANAD020419Ni63	ANAD69	Surface Wipe	300	Warehouse, Sec-1, Bay 50, floor, concrete, under rack shelving (old M88 ACADA storage area)	0	0	0
ANAD020419Ni63	ANAD70	Surface Wipe	300	Warehouse, Sec-1, Bay 50, floor, concrete, main aisleway, general area (old M88 ACADA storage area)	0	0	0

**Table 3.** Compiled summary of current and historical leak tests and surface contamination wipe survey data for Ni-63 associated with GDLS possession of M88 ACADA units

Total number of discrete M88 ACADA unit leak tested for Ni-63 at GDLS ( $N_1$ )	13
Total number of discrete storage locker, facility and vehicle surfaces wipe sampled for Ni-63 at GDLS ( $N_2$ )	109
Total number of discrete wipe samples for Ni-63 collected at GDLS ( $N$ )	128
Number of discrete M88 ACADA units at GDLS found at or above leak test limit or either surface screening level	0
Number of discrete storage locker, facility and vehicle surfaces at GDLS found at or above leak test limit or either surface screening level ( $n_2$ )	0
Number of discrete wipe samples for Ni-63 at GDLS found at or above leak test limit or either surface screening level	0
Probability that any M88 ACADA unit at GDLS was or is contaminated with Ni-63 in excess of leak test limit or either surface screening level [ $P(B) = p_1 = n_1/N_1$ ]	0
Probability that any discrete storage locker, facility or vehicle surfaces at GDLS was or is contaminated with Ni-63 in excess of leak test limit or either surface screening level [ $P(C) = p_2 = n_2/N_2$ ]	0
Probability that any item, equipment or facility surface at GDLS was or is contaminated with Ni-63 in excess of leak test limit or either surface screening level [ $P(A) = p = n/N$ ]	0

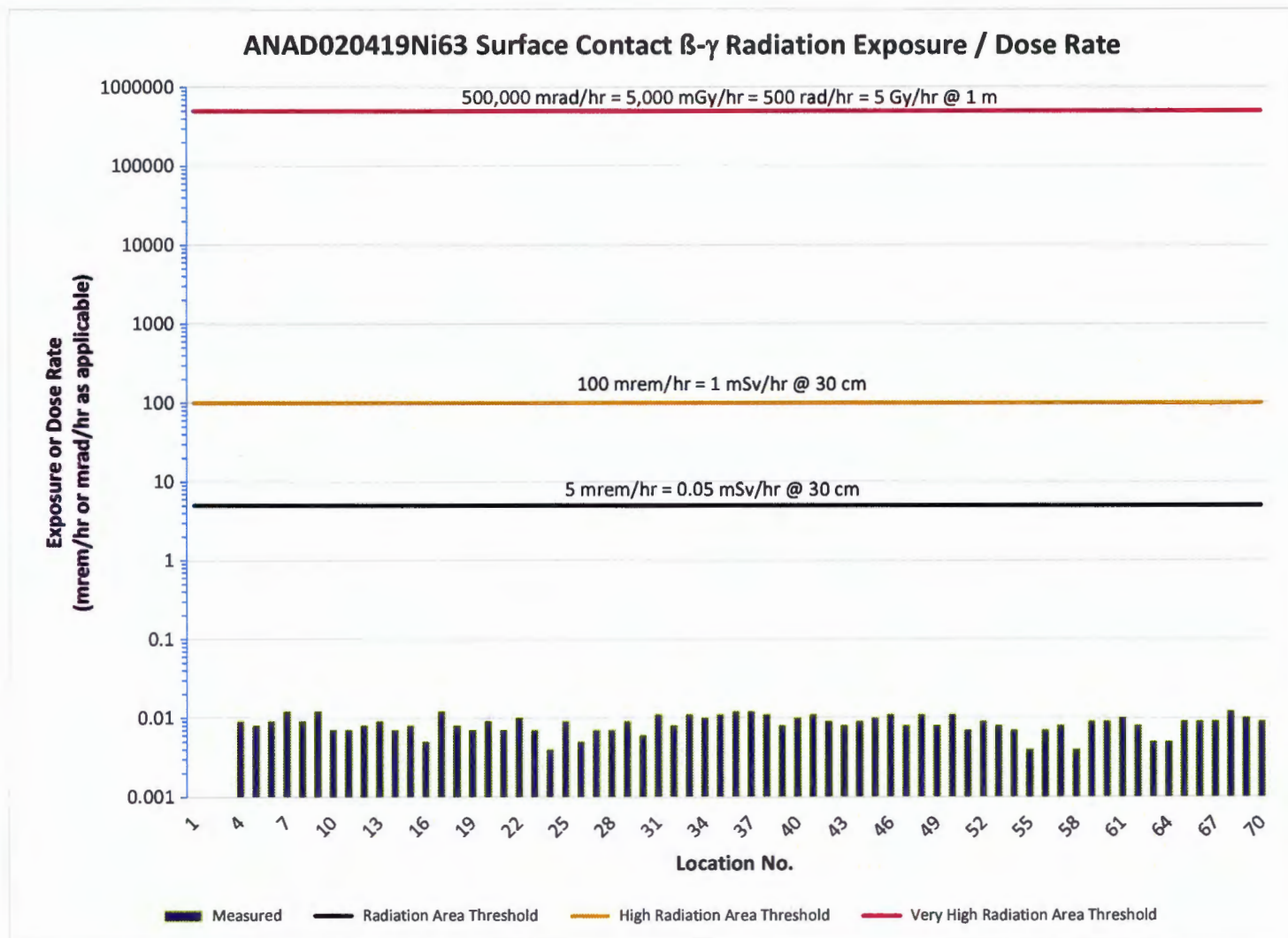
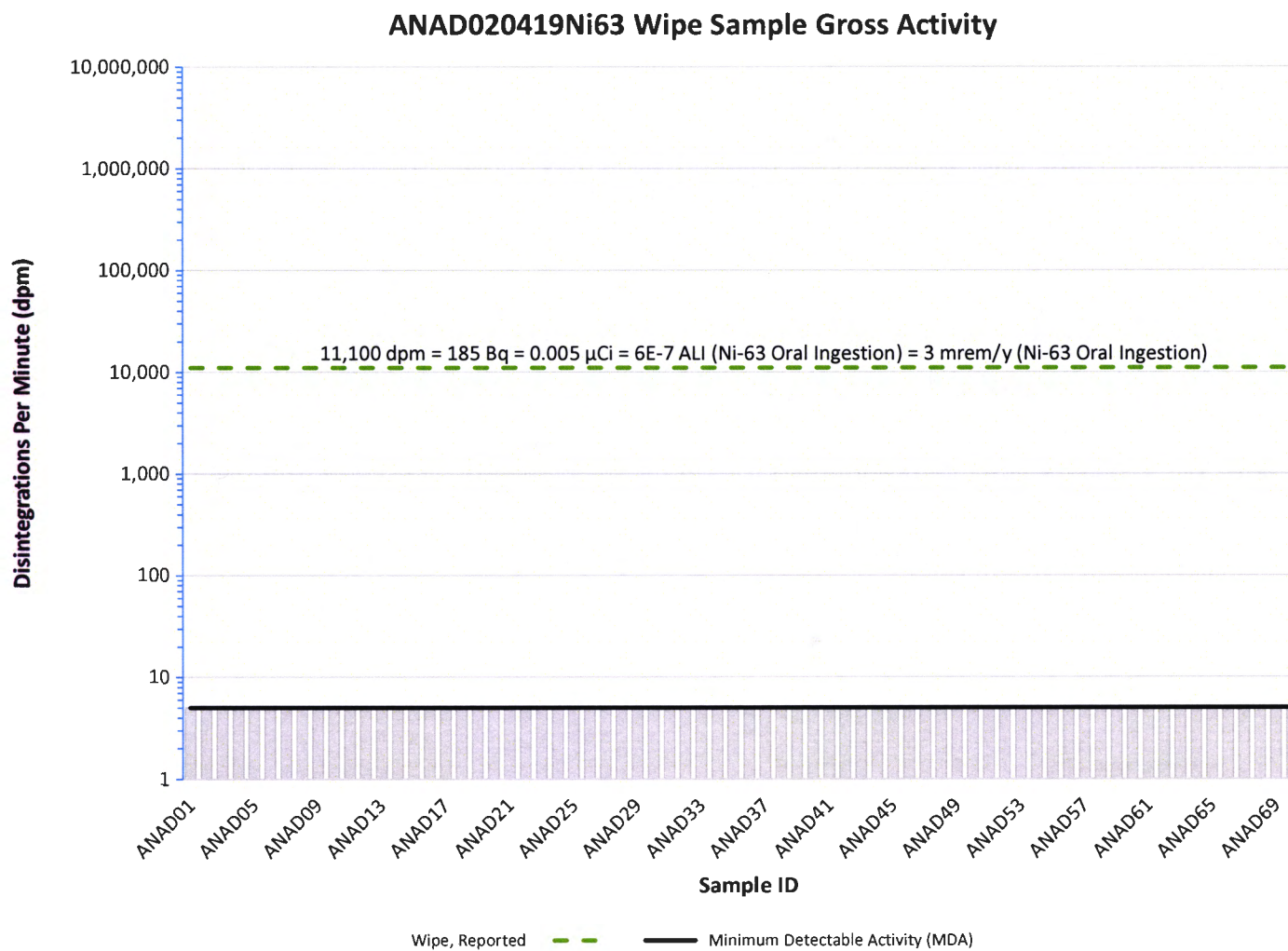


Figure 10.



**Figure 11.**



### ANAD020419Ni63 Wipe Sample and Sampled Surface Specific Activity

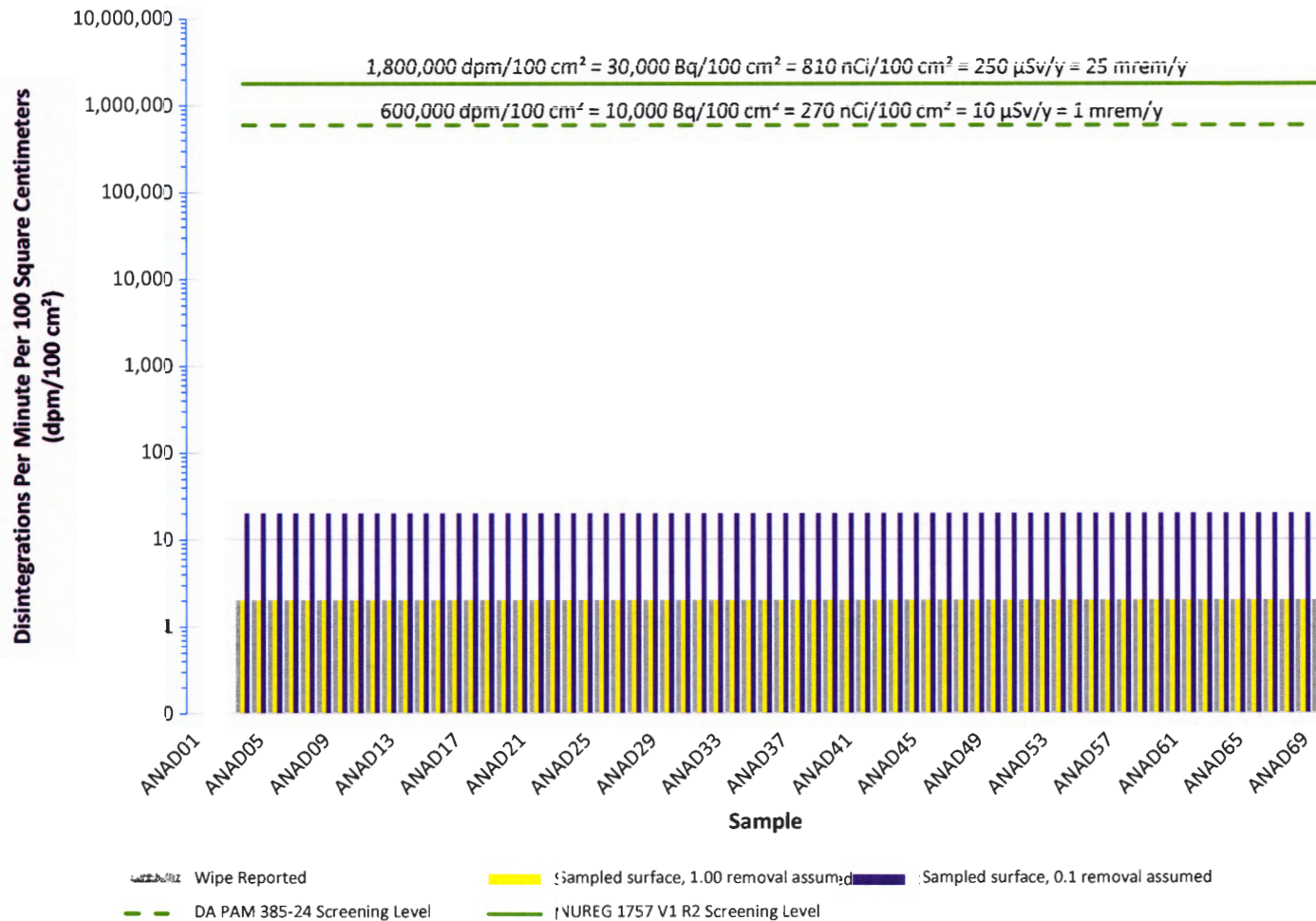


Figure 12.

## Radiological Survey Report

**Survey ID**  
Project No: ANAD020419Ni63  
Date / Time: 02/07/2019 / 08:20 – 13:42  
Type: Direct reading, surface contamination, Ni-63,  
H-3 or any other detectable nuclides  
Purpose: Final decommissioning survey, activities under  
USNRC license no. 21-21068-01

**Equipment**  
Instrument: Berthold Detector: Berthold  
Model: LB1210B Model: LB6255  
No.: 6478 No.: 709  
Cal Date: 12/11/2018 Cal Date: 12/11/2018

**Survey Address**  
General Dynamics Land Systems  
Anniston Army Depot  
7 Frankford Avenue  
Building 105  
Anniston, AL 36201

Source			Counting Statistics			Counting Statistics			Clearance For Release Screening Level (SL) Dose Criterion				
Parameter	Value	Dimension	Parameter	Value	Dimension	Parameter	Value	Dimension	Authority	Value	Dimension	smrem/y	μSv/y
Serial No.	TRR16161	-	Rb	4	cps	eff	0.0062	cps/Bq	DA PAM 385-24 (Grp 4)	600,000	dpm/100 cm <sup>2</sup>	1	10
Nuclide	H-3	-	Tb	1	seconds	MDA	2,050	Bq	NUREG 1757 V1 (H-3)	120,000,000	dpm/100 cm <sup>2</sup>	25	250
t(1/2)	12.32	years	Rs	19	cps	MDA	123,000	dpm	NUREG 1757 V1 (Ni-63)	1,800,000	dpm/100 cm <sup>2</sup>	25	250
A(0)	10,000	Bq	Ts	1	seconds								
A(0) Date	10/12/1993	-	Rn	15	cps								
A(t) Date	2/7/2019	-	k	1.645	-								
t	25.32	years	Lc	5	cps								
A(t)	2,406	Bq	Ld	13	cps								

Analysis Data													
Survey Location			Detector Window Area (a) cm <sup>2</sup>	Count Rate (Rc)		Measured Activity							
				Gross (Rc,g)	Net (Rc,n)	Quantitative			Qualitative				
No.	Surface	Building #				Total (A)	Specific (SpA)		Rc,n <Lc?	Rc,n <Ld?	≤MDA dpm?	≤385-24 SL?	≤NUREG 1757 SL?
				cps	cps	Bq	dpm	dpm/100 cm <sup>2</sup>					
36	Secure Room, floor, concrete, at personnel door	134	22	6	2	320	19,000	90,000	Yes	Yes	Yes	Yes	Yes
37	Secure Room, floor, concrete, at materials door	134	22	5	1	160	10,000	50,000	Yes	Yes	Yes	Yes	Yes
38	Secure Room, floor, concrete, adjacent to materials door	134	22	8	4	650	39,000	180,000	Yes	Yes	Yes	Yes	Yes
39	Secure Room, floor, concrete, middle, under rack shelving	134	22	4	0	0	0	0	Yes	Yes	Yes	Yes	Yes
40	Secure Room, floor, concrete, middle, in main aisle	134	22	12	8	1,290	77,000	350,000	No	Yes	Yes	Yes	Yes

**Survey ID**  
 Project No: ANAD020419Ni63  
 Date / Time: 02/07/2019 / 08:20 – 13:42

**Equipment**  
 Instrument: Berthold Detector: Berthold  
 Model: LB1210B Model: LB6255

**Survey Address**  
 General Dynamics Land Systems  
 Anniston Army Depot

Analysis Data														
Survey Location			Detector Window Area	Count Rate (Rc)		Measured Activity								
						Quantitative			Qualitative					
				Gross (Rc,g)	Net (Rc,n)	Total (A)		Specific (SpA)	Rc,n <Lc?	Rc,n <Ld?	≤MDA dpm?	≤385-24 SL?	≤NUREG 1757 SL?	
No.	Surface	Building #	cm²	cps	cps	Bq	dpm	dpm/100 cm²						
41	Secure Room, floor, concrete, middle, general area	134	22	5	1	200	10,000	50,000	Yes	Yes	Yes	Yes	Yes	
42	Secure Room, floor, concrete, middle, under rack shelving	134	22	>3000 Off Scale	See notes 3 and 4	>480,000	>29,000,000	>132,000,000	No	No	No	No	No	
43	Secure Room, floor, concrete, middle, in main aisle	134	22	9	5	810	48,000	220,000	No	Yes	Yes	Yes	Yes	
44	Secure Room, floor, concrete, middle, under rack shelving	134	22	10	6	1,000	60,000	270,000	No	Yes	Yes	Yes	Yes	
45	Secure Room, floor, concrete, middle, general area	134	22	10	6	1,000	60,000	270,000	No	Yes	Yes	Yes	Yes	
46	Secure Room, floor, concrete, middle, in main aisle	134	22	9	5	800	50,000	200,000	No	Yes	Yes	Yes	Yes	
47	Secure Room, floor, concrete, middle, under rack shelving	134	22	10	6	970	60,000	300,000	No	Yes	Yes	Yes	Yes	
48	Secure Room, floor, concrete, back, general area	134	22	10	6	1,000	60,000	300,000	No	Yes	Yes	Yes	Yes	
49	Secure Room, floor, concrete, back, in main aisle	134	22	6	2	300	20,000	100,000	Yes	Yes	Yes	Yes	Yes	
50	Secure Room, floor, concrete, back, general area	134	22	12	8	1,300	80,000	400,000	No	Yes	Yes	Yes	Yes	
51	Shipping / Receiving Dock, floor, concrete at loading door, General area	134	22	8	4	1,000	40,000	200,000	Yes	Yes	Yes	Yes	Yes	
52	Shipping / Receiving Dock, floor, concrete at Secure Room material door, General area	134	22	15	11	1,800	110,000	500,000	No	Yes	Yes	Yes	Yes	
53	Shipping / Receiving Dock, loading ramp floor (platform), steel (painted)	134	22	8	4	600	40,000	200,000	Yes	Yes	Yes	Yes	Yes	

**Survey ID**  
 Project No: ANAD020419Ni63  
 Date / Time: 02/07/2019 / 08:20 – 13:42

**Equipment**  
 Instrument: Berthold Detector: Berthold  
 Model: LB1210B Model: LB6255

**Survey Address**  
 General Dynamics Land Systems  
 Anniston Army Depot

Analysis Data														
Survey Location			Detector Window Area cm²	Count Rate (Rc)		Measured Activity								
						Quantitative			Qualitative					
				Gross (Rc,g)	Net (Rc,n)	Total (A)		Specific (SpA)	Rc,n <Lc?	Rc,n <Ld?	≤MDA dpm?	≤385-24 SL?	≤NUREG 1757 SL?	
No.	Surface	Building #		cps	cps	Bq	dpm	dpm/100 cm²						
54	Shipping / Receiving Dock, floor, concrete, loading ramp, on slope	134	22	10	6	1,000	60,000	300,000	No	Yes	Yes	Yes	Yes	Yes
55	Shipping / Receiving Dock, floor, concrete, at loading ramp base	134	22	>2000	See note 3	>320,000	>19,000,000	>86,000,000	No	No	No	No	No	No
56	Shipping / Receiving Dock, floor, concrete, packaging area, general area	134	22	>2000	See note 3	>320,000	>19,000,000	>86,000,000	No	No	No	No	No	No
57	Shipping / Receiving Dock, floor, concrete, packaging area, general area	134	22	8	4	600	40,000	180,000	Yes	Yes	Yes	Yes	Yes	Yes
58	Materials Supervisor Office, floor, tile	134	22	9	5	1,000	50,000	200,000	No	Yes	Yes	Yes	Yes	Yes
59	Materials Office, floor, tile, general area	134	22	30	26	4,000	252,000	1,100,000	No	No	No	No	No	Yes
60	Materials Office, floor, tile, general area	134	22	8	4	650	39,000	180,000	Yes	Yes	Yes	Yes	Yes	Yes
61	Break Area, floor, tile, general area	134	22	8	4	600	40,000	200,000	Yes	Yes	Yes	Yes	Yes	Yes
62	Break Area, floor, tile, at refrigerator	134	22	9	5	800	50,000	200,000	No	Yes	Yes	Yes	Yes	Yes
63	Break Area, floor, tile, at microwave oven	134	22	2500	See note 3	400,000	24,000,000	109,000,000	No	No	No	No	No	No
64	Break Area, floor, tile, at vending machine	134	22	8	4	600	40,000	200,000	Yes	Yes	Yes	Yes	Yes	Yes
65	Lav/Fountain/Ice Mach hallway, floor, tile, at men's room door	134	22	200	See note 3	30,000	2,000,000	9,000,000	No	No	No	No	No	No
66	Lav/Fountain/Ice Mach hallway, floor, tile, at drinking fountain	134	22	700	See note 3	110,000	7,000,000	32,000,000	No	No	No	No	No	No



**Survey ID**  
 Project No: ANAD020419Ni63  
 Date / Time: 02/07/2019 / 08:20 – 13:42

**Equipment**  
 Instrument: Berthold Detector: Berthold  
 Model: LB1210B Model: LB6255

**Survey Address**  
 General Dynamics Land Systems  
 Anniston Army Depot

Analysis Data														
Survey Location			Detector Window Area	Count Rate (Rc)		Measured Activity								
						Quantitative			Qualitative					
				Gross (Rc,g)	Net (Rc,n)	Total (A)		Specific (SpA)	Rc,n <Lc?	Rc,n <Ld?	≤MDA dpm?	≤385-24 SL?	≤NUREG 1757 SL?	
No.	Surface	Building #	cm²	cps	cps	Bq	dpm	dpm/100 cm²						
67	Lav/Fountain/Ice Mach hallway, floor, tile, at women's room door	134	22	700	See note 3	110,000	7,000,000	32,000,000	No	No	No	No	No	No
68	Warehouse, Sec-1, Bay 50, floor, concrete, adjacent to main aisle (old M88 ACADA storage area)	134	22	15	11	1,800	110,000	500,000	No	Yes	Yes	Yes	Yes	Yes
69	Warehouse, Sec-1, Bay 50, floor, concrete, under rack shelving (old M88 ACADA storage area)	134	22	>3000 Off Scale	See note 3	>480,000	>29,000,000	>132,000,000	No	No	No	No	No	No
70	Warehouse, Sec-1, Bay 50, floor, concrete, main aisleway, general area (old M88 ACADA storage area)	134	22	22	18	2,900	174,000	790,000	No	No	No	No	No	Yes

**Survey ID**  
 Project No: ANAD020419Ni63  
 Date / Time: 02/07/2019 / 08:20 – 13:42

**Equipment**  
 Instrument: Berthold Detector: Berthold  
 Model: LB1210B Model: LB6255

**Survey Address**  
 General Dynamics Land Systems  
 Anniston Army Depot

**Notes:**

a – detector window area  
 A – total measured activity  
 $A(bq) = Rc,n/eff$ ;  $A(Bq) = 0$  for  $Rc,n \leq 0$   
 $A(dpm) = (Rc,n/eff) * (1 \text{ dis/Bq-sec}) * (60 \text{ sec/min})$ ;  $A(dpm) = 0$  for  $Rc,n \leq 0$   
 $A(0)$  – source activity at time  $t = 0$  (initial activity)  
 $A(t)$  – source activity at elapsed time  $t$  (present activity)  
 eff - instrument source detection efficiency  
 $Lc$  – critical level;  $Lc = k * ((Rb/Tb) * (1 + Tb/Ts))^{0.5}$   
 $Ld$  – detection limit;  $(k^2/Ts) + 2 * Lc$   
 MDA - minimum detectable activity  
 $MDA (Bq) = Ld/eff$   
 $MDA (dpm) = MDA (Bq) * (1 \text{ dis/Bq-sec}) * (60 \text{ sec/min})$

Rb - background count rate  
 Rc – count rate  
 $Rc,g$  = direct measured gross count rate  
 $Rc,n = Rc,g - Rb$   
 $Rs$  - source gross count rate  
 $Rn$  - source net count rate  
 $SpA$  – measured specific activity  
 $SpA (dpm/100 \text{ cm}^2) = A(dpm)/a(\text{cm}^2) * (100 \text{ cm}^2/100 \text{ cm}^2)$   
 $t$  - nuclide decay time (elapsed time)  
 $t(1/2)$  - nuclide half-life  
 $Tb$  - background measurement time  
 $Ts$  - source or surface measurement time

**Survey ID**  
Project No: ANAD020419Ni63  
Date / Time: 02/07/2019 / 08:20 – 13:42

**Equipment**  
Instrument: Berthold    Detector: Berthold  
Model: LB1210B    Model: LB6255

**Survey Address**  
General Dynamics Land Systems  
Anniston Army Depot

**Notes:**

1. GDLS' primary licensed isotope of concern at ANAD is Ni-63 used in the GID-3/M88 ACADA, NSN 6665-01-438-3673, p/n EA-PRF-2059
2. Quantitative A and SpA are determined based on H-3 counting efficiency (eff); no Ni-63 standard source was readily available for the instrument standardization
3. Reading not valid due to non-radiological environmental interferences with detector (e.g. dust / detector contamination, heavy floor wax/static electricity, wind / airflow underdetector, etc.). (see Voss, 2015; USNRC 2011) See surface wipe sample and direct beta-gamma measurement data for beta activity level for this location.
4. Measurement taken on black tar-like substance  $\leq 1 \text{ ft}^2$  ( $\leq 930 \text{ cm}^2$ ); follow-up beta-gamma measurements with Radiation Alert, Inspector, S/N 17909 and GDAO RSO's (S. Wilson) instrument (portable count rate meter with pancake G-M probe) did not indicate any beta count rates or radiation levels above natural background

**References:**

Headquarters Department of the Army. Department of the Army pamphlet 385-24: Safety: The Army radiation safety program. 30 November 2015.

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U.S. Nuclear Regulatory Commission. Consolidated decommissioning guidance (NUREG-1757). Vol. 1, Rev. 2; 2006.

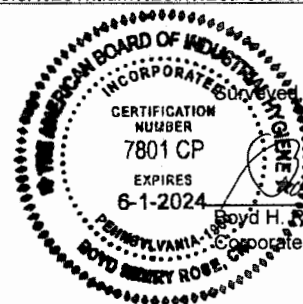
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Surveyed, analyzed, reported and certified by:

Boyd H. Rose, CIH, CP7801  
Corporate Radiation Safety Officer

21 AUG 2020  
Date

RAM Services, Inc.

State of Wisconsin License 071-1234 - 01

Customer: GENERAL DYNAMICS LAND SYSTEMS

PROJECT: GDLS Final Decommissioning Survey, NRC license no. 21-21068-01

Project No: ANAD020419Ni63

LOCATION U.S. Army Anniston Army Depot, Alabama

Initial screening and analyses per RAM Services, Inc., letter of 22 February 2019

0 - 2000 Kev (open window) LSC Results

contact

Henry Rose

586-825-4503

38500 Mound Road Sterling Heights, MI 48310-3200

[roseb@gdls.com](mailto:roseb@gdls.com)



ASSAY # Ni-63	ASSAY # OPEN WINDOW	wipe #	location	Low Energy (0 - 67 Kev) CPM	Low Energy(0 - 67 KeV) DPM	0 - 2000 Kev (CPM)	0 - 2000 Kev (DPM)
NP	163890	1	ANAD01 BUILDING 105 Engraving Room, desktop	NP	NP	<MDA	<MDA
NP	163891	2	ANAD02 BUILDING 105 Engraving Room, desktop	NP	NP	<MDA	<MDA
NP	163892	3	ANAD03 BUILDING 105 Engraving Room, desktop	NP	NP	<MDA	<MDA
NP	163893	4	ANAD04 BUILDING 105 Engraving Room, floor at desk, carpet	NP	NP	<MDA	<MDA
NP	163894	5	ANAD05 BUILDING 105 Engineering Office Area, floor, carpet (runner)	NP	NP	<MDA	<MDA
NP	163895	6	ANAD06 BUILDING 105 Engineering Office Area, floor, tile	NP	NP	<MDA	<MDA
NP	163896	7	ANAD07 BUILDING 105 Facilities Maintenance Shop, floor, tile	NP	NP	<MDA	<MDA
NP	163897	8	ANAD08 BUILDING 105 Warehouse Area, floor, tile	NP	NP	<MDA	<MDA
NP	163898	9	ANAD09 BUILDING 105 Main Office, floor, carpet	NP	NP	<MDA	<MDA
NP	163899	10	ANAD10 BUILDING 277 USG Stryker Warehouse, floor, concrete	NP	NP	<MDA	<MDA
NP	163900	11	ANAD11 BUILDING 277 USG Stryker Warehouse, floor, concrete	NP	NP	<MDA	<MDA
NP	163901	12	ANAD12 BUILDING 277 USG Stryker Warehouse, floor, concrete	NP	NP	<MDA	<MDA
NP	163902	13	ANAD13 BUILDING 414 Materials Warehouse, floor, concrete	NP	NP	<MDA	<MDA

NP	163903	14	ANAD14 BUILDING 414 Materials Warehouse, floor, concrete	NP	NP	<MDA	<MDA
NP	163904	15	ANAD15 BUILDING 414 Materials Warehouse, floor, concrete	NP	NP	<MDA	<MDA
NP	163905	16	ANAD16 BUILDING 414 Materials Warehouse, floor, concrete	NP	NP	<MDA	<MDA
NP	163906	17	ANAD17 BUILDING 414 Materials Warehouse, floor, concrete	NP	NP	<MDA	<MDA
NP	163907	18	ANAD18 BUILDING 414 Materials Warehouse, floor, concrete	NP	NP	<MDA	<MDA
NP	163908	19	ANAD19 BUILDING 414 Materials Warehouse, floor, concrete	NP	NP	<MDA	<MDA
NP	163909	20	ANAD20 BUILDING 414 Materials Warehouse, floor, concrete	NP	NP	<MDA	<MDA
NP	163910	21	ANAD21 BUILDING 414 Stryker New Build, Station 18, floor, concrete	NP	NP	<MDA	<MDA
NP	163911	22	ANAD22 BUILDING 414 Stryker New Build, Station 18, floor, concrete	NP	NP	<MDA	<MDA
NP	163912	23	ANAD23 BUILDING 414 Stryker New Build, Station 18, floor, concrete	NP	NP	<MDA	<MDA
NP	163913	24	ANAD24 BUILDING 414 Stryker New Build, Station 18, floor, concrete	NP	NP	<MDA	<MDA
NP	163914	25	ANAD25 BUILDING 414 Stryker New Build, Station 18, floor, concrete	NP	NP	<MDA	<MDA
NP	163915	26	ANAD26 BUILDING 414 Stryker New Build, main aisleway, floor, concrete	NP	NP	<MDA	<MDA
NP	163916	27	ANAD27 BUILDING 414 Stryker New Build, main aisleway, floor, concrete	NP	NP	<MDA	<MDA
NP	163917	28	ANAD28 BUILDING 414 Stryker New Build, main aisleway, floor, concrete	NP	NP	<MDA	<MDA



NP	163918	29	ANAD29 BUILDING 414 Stryker New Build, main aisleway, floor, concrete	NP	NP	<MDA	<MDA
NP	163919	30	ANAD30 BUILDING 414 Stryker New Build, main aisleway, floor, concrete	NP	NP	<MDA	<MDA
NP	163920	31	ANAD31 BUILDING 414 Break Area / Kitchen, floor, tile	NP	NP	<MDA	<MDA
NP	163921	32	ANAD32 BUILDING 414 Break Area / Kitchen, floor, tile	NP	NP	<MDA	<MDA
NP	163922	33	ANAD33 BUILDING 414 Break Area / Kitchen, floor, tile	NP	NP	<MDA	<MDA
NP	163923	34	ANAD34 BUILDING 414 Break Area / Kitchen, floor, tile	NP	NP	<MDA	<MDA
NP	163924	35	ANAD35 BUILDING 414 Break Area / Kitchen, floor, tile	NP	NP	<MDA	<MDA
NP	163925	36	ANAD36 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163926	37	ANAD37 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163927	38	ANAD38 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163928	39	ANAD39 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163929	40	ANAD40 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163930	41	ANAD41 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163931	42	ANAD42 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163932	43	ANAD43 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163933	44	ANAD44 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163934	45	ANAD45 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163935	46	ANAD46 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163936	47	ANAD47 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163937	48	ANAD48 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163938	49	ANAD49 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA
NP	163939	50	ANAD50 Area Secure Room, floor, concrete	NP	NP	<MDA	<MDA

NP	163940	51	ANAD51 Area Shipping / Receiving Dock, floor, concrete	NP	NP	<MDA	<MDA
NP	163941	52	ANAD52 Area Shipping / Receiving Dock, floor, concrete	NP	NP	<MDA	<MDA
NP	163942	53	ANAD53 Area Shipping / Receiving Dock, floor, steel (painted)	NP	NP	<MDA	<MDA
NP	163943	54	ANAD54 Area Shipping / Receiving Dock, floor, concrete	NP	NP	<MDA	<MDA
NP	163944	55	ANAD55 Area Shipping / Receiving Dock, floor, concrete	NP	NP	<MDA	<MDA
NP	163945	56	ANAD56 Area Shipping / Receiving Dock, floor, concrete	NP	NP	<MDA	<MDA
NP	163946	57	ANAD57 Area Shipping / Receiving Dock, floor, concrete	NP	NP	<MDA	<MDA
NP	163947	58	ANAD58 Area Materials Supervisor Office, floor, tile	NP	NP	<MDA	<MDA
NP	163948	59	ANAD59 Area Materials Office, floor, tile	NP	NP	<MDA	<MDA
NP	163949	60	ANAD60 Area Materials Office, floor, tile	NP	NP	<MDA	<MDA
NP	163950	61	ANAD61 Area Break Area, floor, tile	NP	NP	<MDA	<MDA
NP	163951	62	ANAD62 Area Break Area, floor, tile	NP	NP	<MDA	<MDA
NP	163952	63	ANAD63 Area Break Area, floor, tile	NP	NP	<MDA	<MDA
NP	163953	64	ANAD64 Area Break Area, floor, tile	NP	NP	<MDA	<MDA
NP	163954	65	ANAD65 Area Lav/Fountain/Ice Mach hallway, floor, tile	NP	NP	<MDA	<MDA
NP	163955	66	ANAD66 Area Lav/Fountain/Ice Mach hallway, floor, tile	NP	NP	<MDA	<MDA
NP	163956	67	ANAD67 Area Lav/Fountain/Ice Mach hallway, floor, tile	NP	NP	<MDA	<MDA
NP	163957	68	ANAD68 Area Warehouse, See 1, Bay 50, floor, concrete	NP	NP	<MDA	<MDA
NP	163958	69	ANAD69 Area Warehouse, See 1, Bay 50, floor, concrete	NP	NP	<MDA	<MDA

NP	163959	70	ANAD70 Area Warehouse, See 1, Bay 50, floor, concrete	NP	NP	<MDA	<MDA
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< MDA Less than minimum detectable activity

MDA Low Energy	NP	DPM
MDA Upper energy		5 DPM
Low Energy efficiency	NP	%
Upper energy efficiency		94 %

Questions: Please contact Rick Parlato 920 686 3889 or [rick.parlato@ramservicesinc.com](mailto:rick.parlato@ramservicesinc.com)





BERTHOLD TECHNOLOGIES GmbH & Co. KG  
75323 Bad Wildbad, Germany

## LB 1210B Certificate with LB 6255

Überprüfung gemäß § 67 der Strahlenschutzverordnung /  
Verification in accordance with § 67 German radiation protection regulation

LB 1210B  
Zählrohr / counter tube Typ: LB 6255

Serien / Serial Nr.: 6478  
Serien / Serial Nr.: 709

Rev. Nr.: 00  
Rev. Nr.: 00

Auftrags Nr. / Order No.: 1133782

Kunde / Customer: Berthold Technologies U.S.A., LLC  
OAK RIDGE TN USA

### Funktionsprüfung / Function test:

#### 1. Überprüfung der Zählrohre / Examination of probe

##### $\alpha/\beta$ Zählrohr / counter tube

Nulleffekt / Background: 1,8 IPS / CPS

Istwertaufnahme mit Teststrahler / Results with test  
source H-3 Nr. CT 475 (368 cps in  $2\pi$  02.12.91)

Istwert / actual  
average 47 IPS / CPS

Ansprechvermögen bezogen auf Oberflächenimmissionsrate  $2\pi$  /  
efficiency relating to surface emission rate by  $2\pi$

55,79 %

Relatives Ansprechvermögen / relative response to source emissions rate/(min/max 40% -70%)

#### 2. Sichtprüfung / Optical check

✓

#### 3. Kontrolle der Batterien und Batteriekontakte / Battery check

✓

#### 4. Ansprechschwelle für Batterieanzeige / Low-battery control

✓

#### 5. Akustische Einzelimpulsanzeige / Acoustic function check

✓

#### 6. Funktion der Alarmschwelle / Function of alarm-threshold Optisch / Optical

✓

Akustisch / acoustic

✓

#### 7. Überprüfung von Kabeln und Zubehör / Check of cable and accessory

✓

#### 8. Sonde in Ordnung, Prüfzeichen erteilt / Detector ok, test badge

✓

Datum / Date:  
12.11.2018

Prüfer / Inspector:  
M. Wurster

Head of calibration laboratory  
B. Fröhlich

*M. Wurster*

*B. Fröhlich*

Die verwendeten Meßmittel unterliegen der ständigen Überprüfung gemäß /  
The measuring instruments we use are ISO 9001:2000 certificated

[www.berthold.com](http://www.berthold.com)



## CERTIFICATE OF ANALYSIS

### Grade of Product: ECD/NUCLEAR COUNTER UHP

Customer:	GENERAL DYNAMICS	Reference Number:	32-401388413-1
Part Number:	X02AR90J35000C	Cylinder Volume:	37.2 CF
Cylinder Number:	RSG-017523	Cylinder Pressure:	2014 PSIG
Laboratory:	112 - Troy-32 (SAP) - MI	Valve Outlet:	350
Analysis Date:	Dec 31, 2018		
Lot Number:	32-401388413-1		

Expiration Date: Dec 31, 2026

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

### ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
METHANE	10.00 %	10.00 %	+/- 5%
ARGON	Balance		



  
Approved for Release

## CERTIFICATE OF CALIBRATION



S.E. INTERNATIONAL, INC.

436 Farm Road P.O. Box 39 Summertown, TN. 38483

Ph: 931.984.3581 Fax: 931.984.3584

www.seintl.com | radiationinfo@seintl.com

Certificate Number:

19-561

CAL DATE: 3/12/2019

CAL DUE DATE: 3/12/2022

### Customer Information:

Technical Maintenance Inc.

Donny Prax

117 Jetplex Circle Suite C4

Madison, AL 35758 USA

Inspector SN# 17909

### Instrument Information:

Instrument: Radiation Alert

Type: GM Survey Meter

Model: Inspector

Serial: 17909

Make: LND

Tube Model: 7317

Detector: Internal

Input Sens: 2.4VDC

Inst Voltage set: 506VDC

Contamination Check: ☒

Alarm Check: ☒

Audio Check: ☒

Received: Out of Spec: ☐

Mechanical Check: ☒

Battery Check: ☒ 9.57VDC

Tolerance: ☐  $\pm 10\%$  ☒  $\pm 20\%$  ☐ Out of Spec

### Calibration Data:

S.E. International, Inc. Certifies the above described instrument was calibrated in a known radiation field using a Cs137 (662keV) beam calibrator. Transfer instrument MDH Industries, Model 2025 X-Ray Monitor, S/N. 4351, with 180cc Probe, S/N. 7773. Calibration is traceable to NIST DG8840/87. GM detectors are positioned perpendicular to source. This calibration conforms to ANSI/NCSL Z540-3, ANSI N323-1978, ISO 17025. The results are tabulated below. Measurement of uncertainty is  $\pm 5\%$ . This certificate may not be reproduced, unless in full, without written approval from S.E. International, Inc. TN LICENSE# R-51002-C27

Precision/Constancy Check performed with Cs<sup>137</sup> Source s/n 010818 | Precision: ☒  $\pm 10\%$  ☐  $\pm 20\%$

Constancy Check: 1 uCi of Cs<sup>137</sup> indicates 0.218 mR/hr

Reading 1:	0.227 mR/hr	Temperature:	20.2 °C
		Relative Humidity:	55.3%
Reading 2:	0.206 mR/hr	mmHg:	741.0
Reading 3:	0.221 mR/hr		
Mean:	0.218 mR/hr		

Notes:  
Cal Factor is set at Cal 90. For more on the Cal Factor...see owners manual.

Decade Range	Reference Point	Instrument Meter Reading as Received *	Reading after Calibration *	Correction Factors for > +/- 10%
10 mR/hr - 100 mR/hr	50mR/hr	56.35mR/hr	56.35mR/hr	0.888
1 mR/hr - 10 mR/hr	5mR/hr	4.839mR/hr	4.839mR/hr	None
0.1 mR/hr - 1 mR/hr	0.5mR/hr	0.479mR/hr	0.479mR/hr	None
0 mR/hr - 0.1 mR/hr**	0.05mR/hr	0.045mR/hr	0.045mR/hr	None

\*\* = Range calibrated to electronic standard Inspector models | \* Indicates 1 minute average

Cs137 Gamma 6810 Capsule S/N A-855 and Model 28-5A Calibrator S/N 10291 calibrated monthly for decay

Multimeter S/N 86820561 Cal Date: 09 Nov. 2018 Cal Due: 09 Nov. 2019

Arb Gen. S/N US34004570 Cal Date: Jan 25 2019 Cal Due: Jan 25 2020

Calibrated by: Robert Russell

# **Supplier Calibration**

Document Number  
A3138743

Customer: GENERAL DYNAMICS LAND SYSTEMS  
7 FRANKFORD AVE  
ANNISTON, AL 36201-4199  
FEDEX# 465568887

P.O. Number: CREDIT CARD  
ID Number: 17909



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Description:	GM SURVEY ALARMING RATE METER	Calibration Date:	03/12/2019
Manufacturer:	SE INTERNATIONAL	Calibration Due:	03/12/2020
Model Number:	7317		
Serial Number:	17909		
Inspected by:	CHRISSY KNOWLES		

Comments:

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**Contact any TMI location for all your calibration needs.**

This instrument has been sent by TMI to an outside supplier for calibration.  
All stated compliances are the responsibility of the supplier of the calibration.

Results contained in this document relate only to the item calibrated. Calibration due dates appearing on the certificate or label are determined by the client for administrative purposes and do not imply continued conformance to specifications.

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**Technical Maintenance, Inc.**

Hilliard, OH 614-850-9940    Madison, AL 256-772-4115    Hartford, CT 860-219-0046  
Norcross, GA 770-409-8348    Ft Lauderdale, FL 954-252-2223    Chicago, IL 779-774-3877  
Melbourne, FL 321-242-0890    Temple Terrace, FL 813-978-3054



ID#: 17909  
Cal: 10/21/2015  
Due: 10/21/2016  
Tech: CK

Audio -  
On -  
Off -

Inspector 6146 17909  
Date: 10/21/2015 Due: 10/20/2016 By: RR  
Reading Factor CAL Factor  
60mR/hr None 90  
6mR/hr None  
0.6mR/hr None  
0.06mR/hr None

**FEDEX**  
Express

1768  
B09  
10:30  
11:19  
00:25  
D

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ORIGIN ID: U12A (588) 925-8452  
MICHAEL COPELAND  
GENERAL DYNAMICS LAND SYSTEMS  
38500 ROUND RD  
STERLING HEIGHTS, MI 48310  
UNITED STATES US

SHIP DATE: 24AUG20  
ACTWT: 0.65 LB  
CRD: 0531522/CAFE3313

BILL SENDER

TO MATERIALS LICENSING BRANCH  
US NUCLEAR REGULATORY COMMISSION  
2443 WARRENVILLE ROAD  
SUITE 210  
LISLE IL 60532

SHIP DATE: 24AUG20



TRK 1283 0798 1419

TUE - 25 AUG 10:30A  
PRIORITY OVERNIGHT

NA ENLA

60532  
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